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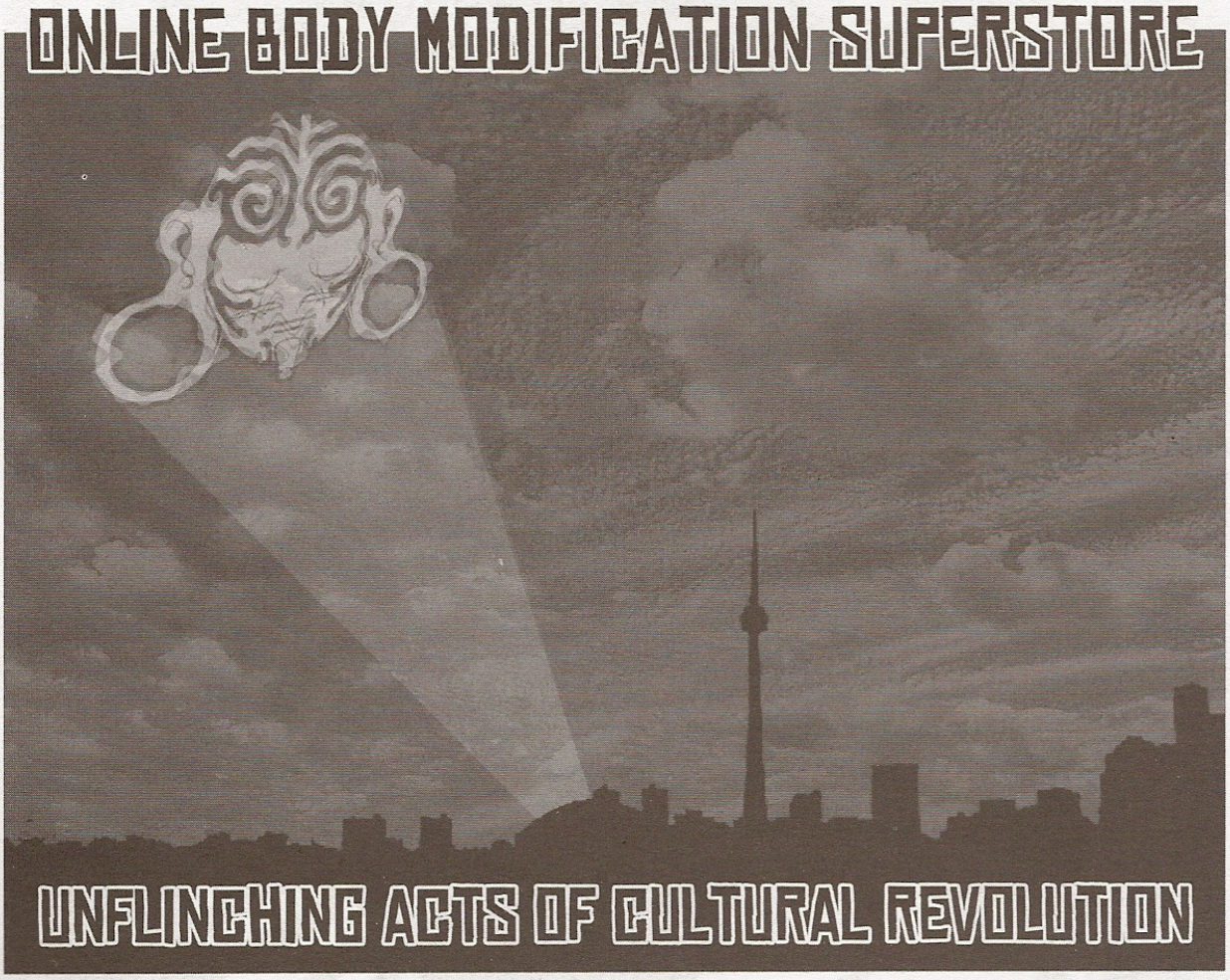

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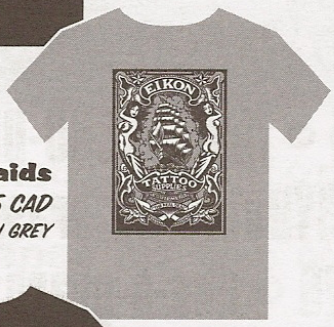

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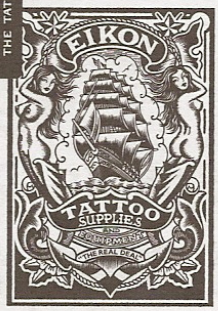

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EDITORIAL

BY BILL BAKER

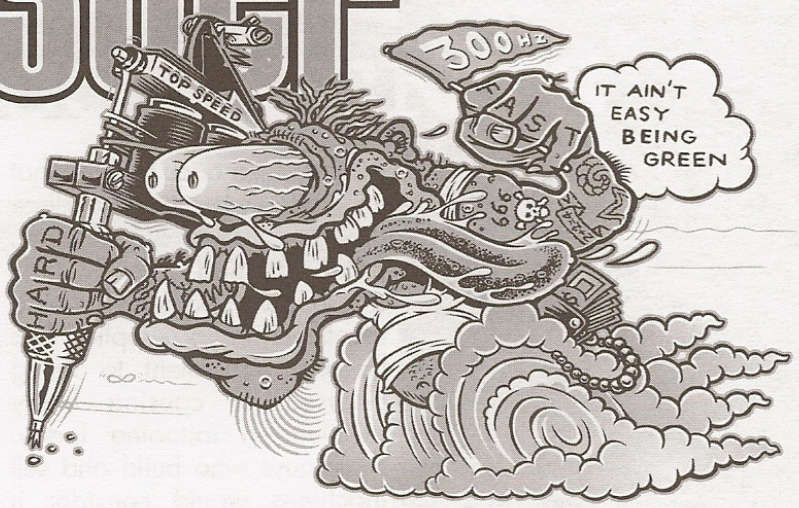
A funny fella once told me that no matter what he had done during his career as a tattooer, at least he had never become a supplier. Somehow being identified as a supplier has become equivalent to being accused of causing every problem in tattooing today. Most guys who build and sell machines would consider it an insult if you called them suppliers. So what are you supposed to call them? Maybe they aren't suppliers, but if they're selling machines, they aren't just tattooers.

Sooner or later, all good tattooers try to improve their work by understanding their equipment. First they modify the machines they've been using, and some eventually build a machine or two. Sometimes they might even sell a couple of machines to friends. These guys are machine builders, but primarily they are tattooers. Not surprisingly, guys who aren't good tattooers don't make good machines. Any good machine builder will tell you that. If someone is making good machines, it generally is only a matter of time until they have a waiting list of customers who want to buy a machine from them. So they increase production, and eventually they have to admit they're building more than a few machines for themselves and friends. They're still tattooers and machine builders but they aren't suppliers, no matter how many machines they sell. These guys are really equipment manufacturers. Suppliers sell all kinds of things that are needed to tattoo, not just one or two products. Some suppliers are also equipment manufacturers. Being called an equipment manufacturer isn't a bad thing; through the process of developing new products, equipment manufacturers have brought about most of the advancements in tattooing. Maybe being a supplier is no worse than being an equipment manufacturer, or a machine builder, or a tattooer. But then who the hell are we going to blame for everything that we don't like? MGM

Most guys who build and sell machines would consider it an insult if you called them suppliers. So what are you supposed to call them?

- ❒ tattooer
- ❒ machine builder
- ❒ equipment manufacturer
- ❒ supplier

green monster



Most days start pretty much the same for most tattooers. They get up, do some stuff, and make their way to work. Some of them know what their day will be like - they know what they've got booked in; for some, "first come, first served" means the only thing they can count on is that they can't count on anything.

One thing that I'm pretty sure is the same for all tattooers is that none of them, on their way to work, ever ask (themselves or anyone else), "I wonder what they're doing at Machinegun magazine this morning?"

On most days it's not even worth asking the question, but one day last year, while tattooers everywhere went about their business, big things were happening here.

Our last high-speed record attempt (Issue 3, November 2002) ended with us giving up without actually reaching the 300Hz mark. Well, we did get the Green Monster to run over 300, but only when we ran with no capacitor, and it was anything but controlled. It had an 80% duty cycle.

With a 22-microfarad capacitor, the machine had been running clean, on under 8 volts, but had topped out at 282Hz. We didn't have any smaller capacitors and we figured we were going to have to lighten the armature bar, so at that point we shut it down.

When we got the smaller capacitor we had request-

ed, we discovered that we also had been sent some big capacitors – big like 68, 100, 150 and 220uF. We knew the big caps would slow the Green Monster down, but the 220uF cap was almost the size of a coil. We had to see what it would do to the machine. We soldered leads on all the new capacitors and got ready to do some learning. We now had twelve different capacitors, five smaller than 22uF and four bigger than 47uF (see chart).

The huge 220uF capacitor actually cut the speed of the machine in half, and dropped the duty cycle from almost 80% to 36%. Don't worry about machine speed for a moment; just consider duty cycle. With no cap the duty cycle was almost 80%, which means 80% of the time the contacts were closed and the magnets were on. Installing the 220-microfarad cap dropped the duty cycle to 36%. That is a complete change in how that machine is running, not just a change in speed.

GREEN MONSTER - Final Capacitor Tests

Mechanical Setup of Machine:

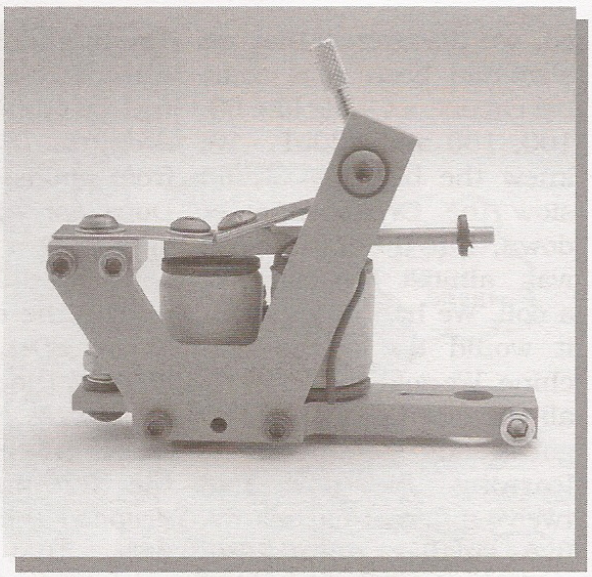
Front Spring Thickness - 0.030" x 2
Front Spring Length - 1"
Front Spring Width - 7/16" x 1/8"
Armature Bar Weight - 11.5 grams

Back Spring Thickness - 0.030"
Back Spring Length - 1/4"
Back Spring Width - 1/2"

Capacitor (uF)	Speed (Hz)	Duty Cycle (%)
with no capacitor	309	79
220	160	36
150	195	44
100	218	50
68	237	55
47	247	57
33	275	59
22	283	63
15	294	65
10	307	67
4.7	328	73
3.3	328	73
2.2	328	73

The smallest capacitors created a duty cycle almost the same as the duty cycle that the machine had with no capacitor on it. A small enough capacitor actually made the machine run faster than it ran with no capacitor. An interesting thing happens at this point. Smaller capacitors will not increase the machine's speed. This proves that there is a point of mechanical limitation. Spring thickness, length and width, in conjunction with the weight of the armature bar, establish the speed of the machine. The capacitor can increase machine speed only by improving the performance of the electrical system of the machine.

We installed the 4.7-microfarad capacitor and the Green Monster was running clean and strong at 328Hz. The mechanical set-up was unchanged from the previous tests – two 0.030" thick front springs stacked together and a 0.030" thick back spring. We were confident that the speed would come up even higher if we lightened the armature bar, and it did. We took off as much material as we could from the front end and top of the armature bar. Because the bar is a type of lever, material removed from the end furthest from the fulcrum point has a greater effect than removing the same amount of material evenly across the entire length of the bar. That brought the speed up almost another 20Hz to 345.

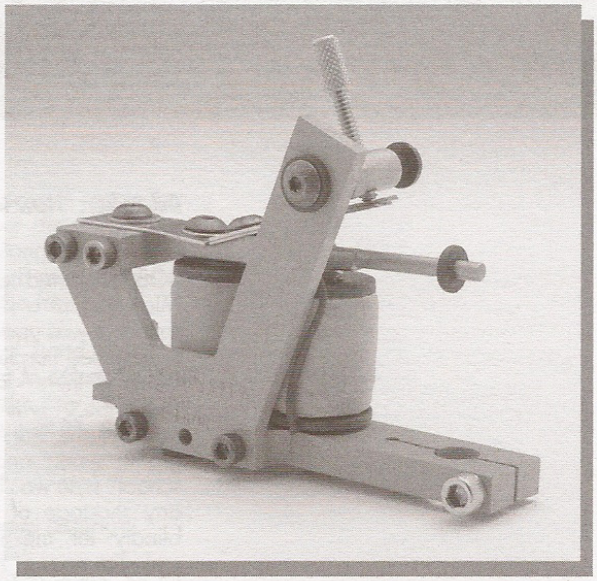


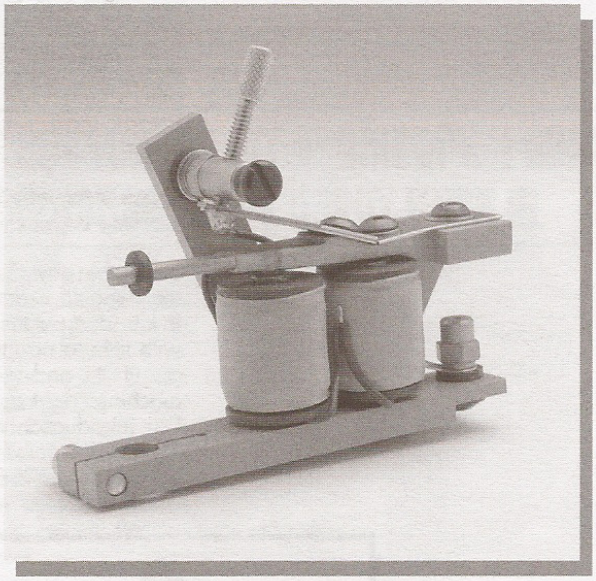
We've succeeded in breaking the 300Hz mark. Could we get the Green Monster to run over 400Hz? Well, maybe, but at a certain point even we have to ask, "Why?"

We've heard from some challengers who intend to take the record away from the Green Monster. To them, we can only say, "Go ahead." The Green Monster was the first documented machine to run this fast, and the reason we did it wasn't to beat anyone else. The objective of building this machine was to learn what factors really affect machine speed the most, and we've done that.

It's important to remember that the machine could not have run that fast if the air gap was bigger. By moving the tube vise so far forward of the front coil core, we were able to create a usable working stroke length from a minimal air gap. This also got people to consider the placement of the front coil core and tube vise in relation to each other as an important element of frame geometry. We also found out some interesting things about coils and frame material.

Pushing the Green Monster to its top speed limits got us to challenge our preconceptions about capacitors. By conducting these tests, we found that





the capacitor seems to be holding some reserve power that the machine can pull from when there is resistance against the machine. The bigger the cap, the more reserve power you have, and more resistance can be applied to the machine without losing any force. A bigger capacitor will also reduce speed and duty cycle, so thicker front and back springs will be required to bring the speed back up. Consequently, the machine will need a bit more voltage to run. The capacitor on a machine should be chosen to provide the back-up power that you want. Generally, bigger needle diameters and bigger needle configurations require more back-up power than smaller diameter needles and smaller needle configurations. If a machine seems like it doesn't have enough power when you're working, it will probably work better for you with a bigger capacitor on it.

Now that the Green Monster has taken its rightful place in tattoo machine history, it's been cleaned up, given a paint job and retired. In the next issue of Machinegun, we're going to build four different machines based on the Green Monster. We'll show you what we'd change about the frame, and what components we'd choose to build a small configuration liner, a big configuration liner, a black and grey shading machine and a machine set up for coloring. MGM

interview 2003

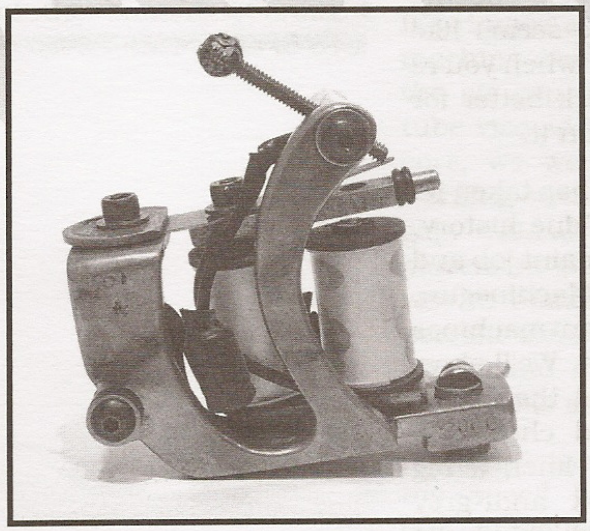
SOBA

Bill Baker: How long have you been tattooing?

SOBA: I started here in Grand Rapids, Michigan, at a shop called Babylon Tattoo. It was upstairs in this big head shop called Purple East. It was pretty weird in there - not at all the street shop vibe. I was doing custom work right off the bat. I was known for graffiti work, and the whole "new school" style was big, so I didn't have any shortage of clients who would blindly let me hack away...lucky me! I'm now at Mos Eisley's Tattoos in Grand Rapids. I work with the absolute best crew around. It's such a great atmosphere. Everyone trusts everyone, and we all feed off each other's creativity. My bosses are my friends, and I couldn't ask for a better shop.

When and why did you first start working on machines?

Well, the guy apprenticing me told me I should order my first machines in kits, and put them together myself – with little to no instruction. I was all about it, and got hooked on the machines right out of the gate. That first introduction caused me to ask, "Why these coils? Why these springs? What's this for?" Etc, etc...



Soba's first machine frame, of which only one was made.

What was the first machine you used to tattoo with?

My first machines were two National Swing-Gates. I wish I still had them.

What was the first really good running machine you had?

The next machines I bought were a Sharpz MicroDial and T-Dial. I got them from Jack Mosher, who brought them back from England straight from Micky. I guess Jack was one of the first guys pimping Sharpz stuff over here. I was sooooo stoked to get them. But before long, I was tweaking them all to hell, too.

What made them run better than what you had been using?

Well, the Sharpz stuff had intentional geometry. The liner was meant to be a liner and so on. Plus they had iron frames, better core material, and better spring setups.

What motivated you to build the first frame you ever made?

I just kind of felt like it was the next step. I have always, since I was a kid, felt a need to make stuff. Not just draw or paint, but fabricate, sculpt, etc. So as far as machines go, I felt like I *had* to make my own frame. I never even wanted to sell them at first; I just *had* to make my own.

How did you fabricate that first machine?

That was carved from wax, and I took it to a jewelry caster and he cast the one-off in silicon bronze.

Was there a lot of hand finishing or was that pretty close to the casting?

Oh no, there was a lot of hand finishing. It actually had another little piece on it, a little decorative piece between the two uprights, which I ended up cutting off. It was all finished by hand – that frame was not machined, it was cast with most of the holes in place. The spring shelf and coil shelf were shaped with the belt sander and files.

Right. I guess that's not really common to cast the holes. Usually you gotta drill all the holes after you get the cast back.

Correct.

What is the procedure for you now when you build a new frame? Do you work it out on paper first?

I have a set geometry diagram on my computer. I print that out, draw the frame design over the guides and develop it from there. I always draw it out a few times first. I made a pad of paper, with just the geometry diagram on it, so I can sketch frame designs whenever I want. If I get a good one, it's already close to scale. From there comes the actual 3D pattern. Depending on it if will be sand-cast or investment-cast, the pattern will be wax, plastic, or wood. From there comes the mold, casting, machining, etc...

I have to admit, I don't know very much about casting. What's the advantage or difference between sand casting and investment casting?

Investment casting is a lost wax process and you can get a lot more detail. There are wax patterns that are coated in ceramic so your mold is basically completely surrounding the frame. The wax is then melted out and the metal poured back in, and so it takes the exact shape of what the wax was.

So the wax is like a model of what you're going to end up with.

Yes. For every frame you have to have it's own separate wax, because the wax is gone and then the metal replaces it. So if you're going to cast fifty brass frames, you have to have fifty wax patterns. You make a mold off of the original master pattern and then you inject the wax into that mold and make multiple waxes.

Okay. So you don't have to hand carve every wax, but it's still seems time consuming.

Oh yeah, it's expensive and time consuming, but your dimensions are so much farther along that it really lessens the amount of machining that has to be done to the frame.

And the amount of hand finishing, so maybe it's going to offset the cost there. It won't make any difference structurally, though, will it?

Structurally, no – the metal is the metal.

Okay – and then sand casting?

Sand casting is maybe six to ten patterns on a board and they press those – they make an impression into the sand and then they pour the metal into the sand, and that's what makes all of your frames. But it's really flat – you can't get any detail, because the sand is so rough. Then you have to have a draft on it - it has to enter the sand at an angle so that it can come back out cleanly. So all that draft has to be machined off. The Phantom frames that I make have to be investment-cast because of the dimension and the style; the Rustos and the Workhorses are all flat, so they can be sand-cast.

I'M ALWAYS DEVELOPING MY GEOMETRY. I THINK I'M PRETTY CLOSE TO BEING HAPPY WITH IT.

Are they?

Yes.

The casting process isn't something that you could do yourself.

You'd really need to research it and have a lot of equipment – and safety equipment, especially if you're casting iron. I mean, there's the furnaces to melt the iron and there's the sand itself; it's a chemical sand that they actually press around your pattern and when it hardens, they pour the iron in and they actually break the sand apart so they can reuse it. So I mean, you're not going to do any sand casting in your backyard.

Other than that, other means of machine manufacturing would be machining from a billet.

Yes, manufacturing from a billet or fabricating, you know, welding.

Machining completely from a billet seems like it wouldn't be very cost effective.

Actually, it's not that bad. Your main thing is the first one. That's where they hit you. I was going to have a machine completely CNC manufactured out of a billet; but I just didn't, 'cause it looks too clean, it looks too pretty, and I didn't like it. But the frame would have cost me around the same as casting once you're into production.

Then again, we're talking about look a little bit; I guess it's a preference, but a lot of it must stem from history. It's something we're used to seeing, the look of the machine. Some of that is historically pretty rough because they were hand made, or they were all sand-cast or something.

WELL, THERE'S SOMEBODY WHO WILL DO ANYTHING FOR YOU, IF YOU PAY THEM.

Generally they were sand-cast.

Do you think that's any acknowledgement to historical machines, in your case?

A little bit, but not so much. I wasn't really into the whole "keeping the tradition alive" thing.

What did you have to go through to get a geometry you were happy with? Do you feel that geometry is something you're going to change continuously, or have you settled on something that you're happy with and now you're just going to work on the appearance of your machines?

I always try to develop it further, from simple hole placement to the thickness of the frame. I'm always developing my geometry. I think I'm pretty close to being happy with it.

So it's kind of half geometry and half the look of things – they're both important, obviously.

They're both very important to me. They have to work. I try to make them so that I can assemble them easily, but I gotta just like the way they look, of course. The most important thing has got to be how it's going to run – I mean, it's a tool first and foremost.

I wonder how much standardization is responsible for the look of machines and what should or shouldn't be standardized on a machine. Obviously the size of a tube stem is now very standardized in tattooing, so the size of the tube vise is standardized. You'd be crazy to make your own different-sized tube stem and tube vise on your machine.

Yeah, that would be ridiculous, because people have already got a slew of tubes from three other suppliers that are all the same size.

Exactly. I think coil height has become standardized over the years. There are short coils with a yoke, which create the same height as a tall pair of coils, so I think there's some standardization there. And clipcords became the common way of attaching a power cord to the machine long ago. Now a lot of guys are switching to an RCA connector cord; do you feel that everyone should use the same connector, or should each builder do his own thing?

I always base my geometry off of a clipcord because it's the majority. When someone calls me up to order a machine specifically for them, they say well, I use this needle grouping and this pigment and this is how I want it to run. Then I always ask them, "Are you using a clipcord or RCA?" I definitely keep some RCA's on hand so that I can facilitate what they want. And you know, you can just customize some little brackets and stuff out of spring stock for the RCA jacks.

Front spring length is based on geometry, too. It's not really standardized, but I guess you've got something figured out that works.

I'm hand-cutting springs for every machine that I make, so I tend to kind of base my geometry on a set distance, you know, as far as that goes, 'cause I make a cut-back. Where my binder is going to go, I kind of base that off the other relationships. But when I'm hand-cutting springs, I can compensate width and length.

Do you sell pre-cut springs for guys?

No. Guys sometimes want an extra set of springs; I'll hand-cut them an extra set for that frame and put them in with the machine.

I guess then the expectation is that they can cut their own springs – it's not that hard to do.

Well, you would hope so, eventually. But you'd be surprised.

Oh, I'm not. Believe me.

I've had guys, seriously, who've sent the machine back so that I could put a shim under the front coil.

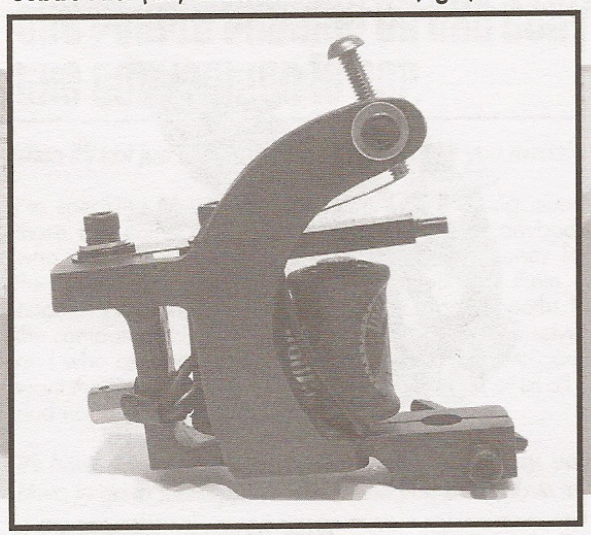
That's certainly not the way tattooing ever was before.

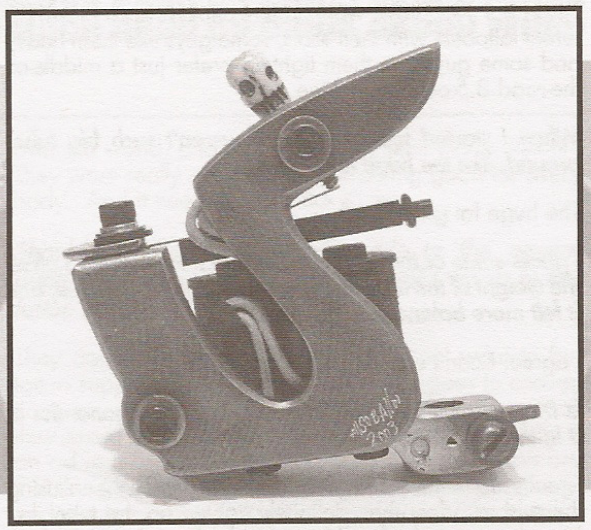
Tattooers used to be self-sufficient.

But that sort of seems to be the direction that tattooing is going. I don't know if that's good or bad, but most people who own a car don't know even know how to change a tire.

Well, there's somebody that will do anything for you, if you pay them. It would be nice if everybody knew how to do their own stuff, but then I'm not going to sell as many machines that way – so it's got it's good and bad, you know.

Soba's Pilot (left) and Rusto machines (right).





Do you have some secret formula for coils?

It's all about the quality of the components. I use a really high quality wire. I use the closest thing to pure iron that I can get for the core, I tap them shallow – and you know, it's that magic of making them by hand. I think that helps.

They seem to be working right. Do you heat shrink them all?

Generally. It depends on the machine, too. On a standard machine that I make, I'll heat shrink them. We can use some fancy fabric tapes with clear heat shrink. I've done some stuff with copper foil actually embossed and wrapped around the coils.

Now you've started Workhorse Irons. Who's involved in it, and what's going on there?

Workhorse is owned by myself and Seth Ciferri, and we offer machines by some of the top builders. Right now, it's Seth, myself, Aaron Cain and Adam Ciferri; we have a couple of other builders in the works. Maybe in another year or so we'll come out with models from them.

Right. So Workhorse is you and Seth – and then other builders will provide you with one machine.

We supply them with everything they need for the machines so that they're all standardized, as far as Workhorse goes. They all look pretty close. We all design our own frames, then they're all cast at the same foundry, and machined by the same machinist. So what we're doing is offering a $250 dollar machine versus a $350 machine because we can order so many front binders at once. We can make a lot more frames at once, so that basically we're just passing along the savings. It's still a super strong-running machine, built by a top builder; it's just that the parts are ordered in bulk.

What's a normal day at Workhorse?

Well, because Seth's in Baltimore and I'm in Michigan, I actually run the company here in Grand Rapids. We have a workshop that's not really a storefront, 'cause all of our orders are by phone or via the Internet. Everything is shipped here. All the guys build their own machines; they send them here and then all the orders come here. I handle all the orders and ship them out from here.

Do you do final assembly there?

No, when they buy an Aaron Cain Workhorse machine, it was built and tuned by Aaron Cain.

Then it comes to you and you handle the logistics of getting it to the customer and dealing with the money. How many frame styles do you personally make and sell now?

I have the Rusto in iron, and just recently made some in brass. I have two Workhorse frames – the Pilot, and my Mini-Rusto. Every year or so I come out with some limited-edition frame; I'm working on the new Phantom frame now. This will be the fourth edition of the Phantom style.

Do you have a preference of material for a frame?

I love iron; but personally, I prefer brass. Which is funny, because four out of the five machines I use regularly are iron. Huh. But I do love the way brass feels and looks. I like yokes on machines.

How many machines do you keep on hand to work with every day now?

I have five machines that I use regularly, without tweaking.

What are the differences between them?

The way they run, the feel, the weight. Oh yeah, the most important thing – how they look! Ha ha ha... But really though – different machines for different pigments and needle groupings, you know? I have a liner that Seth made me for loose sevens, one I made for threes and fives, a faster color machine from Aaron, a black and gray shader I made, and a slow, punchy color machine I made.

When you're building machines, is weight a consideration?

Yeah, but you know, when you're supplying so many different tattooers with their tools, some guys like them heavy and some guys like them light. I prefer just a middle-of-the-road 8.5-ounce machine.

When I started tattooing, there weren't such big tubes around, like the huge tube grips.

The huge fat grips, yeah.

I guess some of that sort of stemmed from trying to offset the weight of the machine with the weight of the tube, and it felt more balanced in the hand.

I agree. I can't use the little skinny grips.

Is it a weight thing or a size thing, or the ergonomics of it in the hand?

I really think it's the ergonomics, 'cause I've been using the rubber grips; they definitely lighten up the tube, but it's a lot more comfortable to hold. So I definitely think it's more ergonomics than weight.

Do you see the machine we use and are familiar with, the oscillating relay, staying in the trade forever? I feel like it should, and I hope it does.

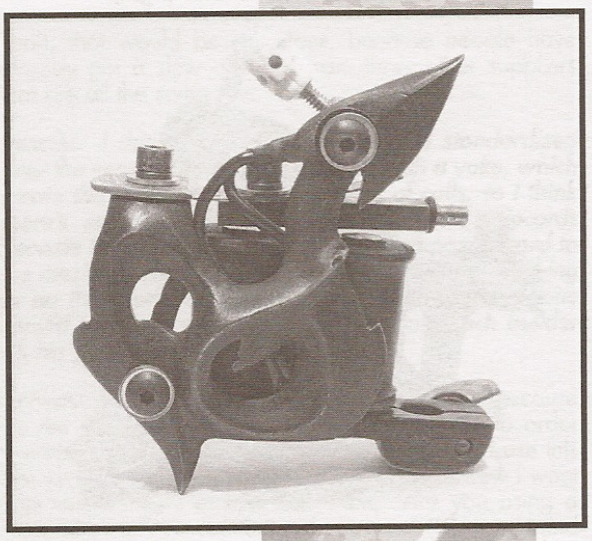
I think that most people really want it to, because it's so comfortable and it's just right. Using a coil machine is just right; it feels right, it sounds right, it works right. It's a tattoo – I'm not saying that rotary machines or anything else are wrong. A lot of people are trying to one-up it, to make a machine that's more efficient, quieter, runs better, and runs the same all the time. You know, knock yourself out – but I think it's always going to fall back on two coils and a pair of springs.

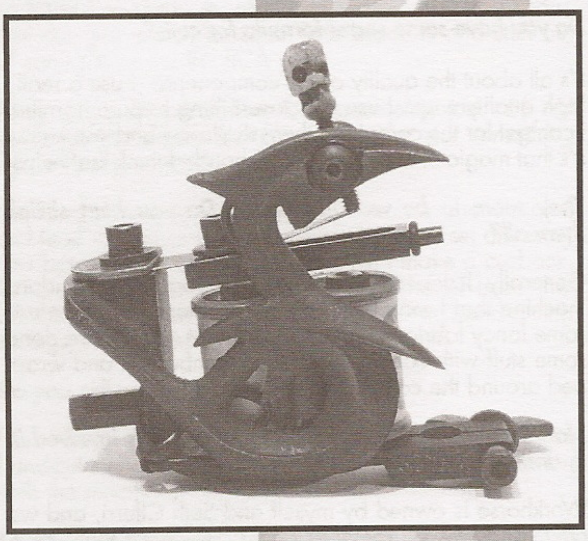
What do you see for the future of conventions?

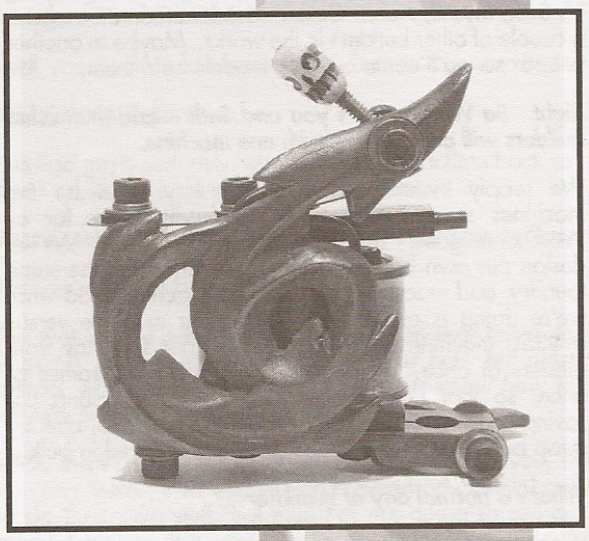
It could go either way. Everybody keeps saying that with the amount of tattoo shops springing up all over the place, the bottom's going to fall out – but we've been hearing that the bottom's going to fall out for years, and it hasn't yet. Now certainly it's starting to slow down, but it's not falling out. I would love to say that if the conventions don't change that the bottom's going to fall out, but I don't think that's going to happen. They are going to be less and less profitable and you're not drawing from four states away anymore. You're drawing from that state and that's about it. And that's what's going to continue, as far as I see; you're not going to have that worldwide draw anymore.

On the convention floor, some guys have been sequestered away in a side room where suppliers are supposed to be selling stuff. And some guys who are tattoers sell some machines, but they're not suppliers, so should they be put in that room?

I am adamant about this, because I've been screwed at conventions this way. The people who are putting on the convention need to think about what the convention is for. It's not just about making the money, because they're letting any Tom, Dick and Harry vendor come in there, any supplier who will sell anything to anybody.







Soba's investment-cast, limited-edition Phantom frame series.

THE PEOPLE PUTTING ON THE CONVENTION NEED TO THINK ABOUT WHAT THE CONVENTION IS FOR.

Then it's not just tattoo suppliers, is that what you mean?

I'm speaking about tattoo suppliers. I'm talking about those big companies that are selling junk to anybody who will buy it, and because they have the money for the booth, the convention promoters will sell them a booth. What they need to do is give vendor booths to the companies and the individuals who police themselves and who are responsible enough to know that we don't want this stuff in the wrong hands, for the good of us all – and not separate us.

It's hard, though; I mean, who's going to say, okay, you have to go in the supplier room, and you don't have to.

But see, again, if you're in the game - if you're in the industry - you know. It's not a secret. It's not who's to say and who's not to say. You just know. You know who's selling junk, and you now who's selling quality stuff; you know who cares about the business and you know who's sucking money out of it. These guys that don't have any tattoos, that don't do tattoos, that have never tattooed - they're making thousands of dollars a year off of our industry and they're not giving a dime of it back. They're not selling us supplies that are bettering our industry.

No, and the money's going out of the trade and not coming back in. Maybe everybody should just be able to sell on the floor, and it's like buyer beware, but then…

No, it's not buyer beware – it's don't put these assholes on the fucking floor in the first place. If you're a convention promoter, then you're a tattooer, or you used to be because there's no non-tattooers that are still promoting conventions. So then, if you're to the point where you're throwing a convention, you know, that's all there is to it – so stop giving these assholes an avenue to sell their stuff and promote the guys that give a shit.

So you're saying the convention promoter, or the guy who is putting on the convention, is the one responsible. If he's letting jerks sell stuff at his convention, nobody should go to it. That would be the hope, right?

And that's what we've done. We've pulled out of certain conventions and we're just not going to do them anymore. I mean, there's too many as it is.

I kind of wonder what benefit conventions are now. I guess it is possible to put on a good convention and still be profitable.

Absolutely. Everybody can have a great time, everybody can make money, and it can actually do well for everybody else. They started doing it by having suppliers there in the first place, then bringing in big name artists from all over the world, and then by giving seminars to tattoers. They were really meant to do something good for everybody. And it needs to get back to that.

Should the suppliers be accessible to the general public? I don't think the general public wants to buy tattoo supplies.

They don't. The general public does not want to buy tattoo supplies. The general public that goes to conventions are collectors. They buy the tattoo magazines, they see work from this guy and they see, hopefully in an ad in that magazine, that there is a convention and that this guy's going to be there, and they're going to go and get tattooed. They don't care about ink, needles, machines, nothing.

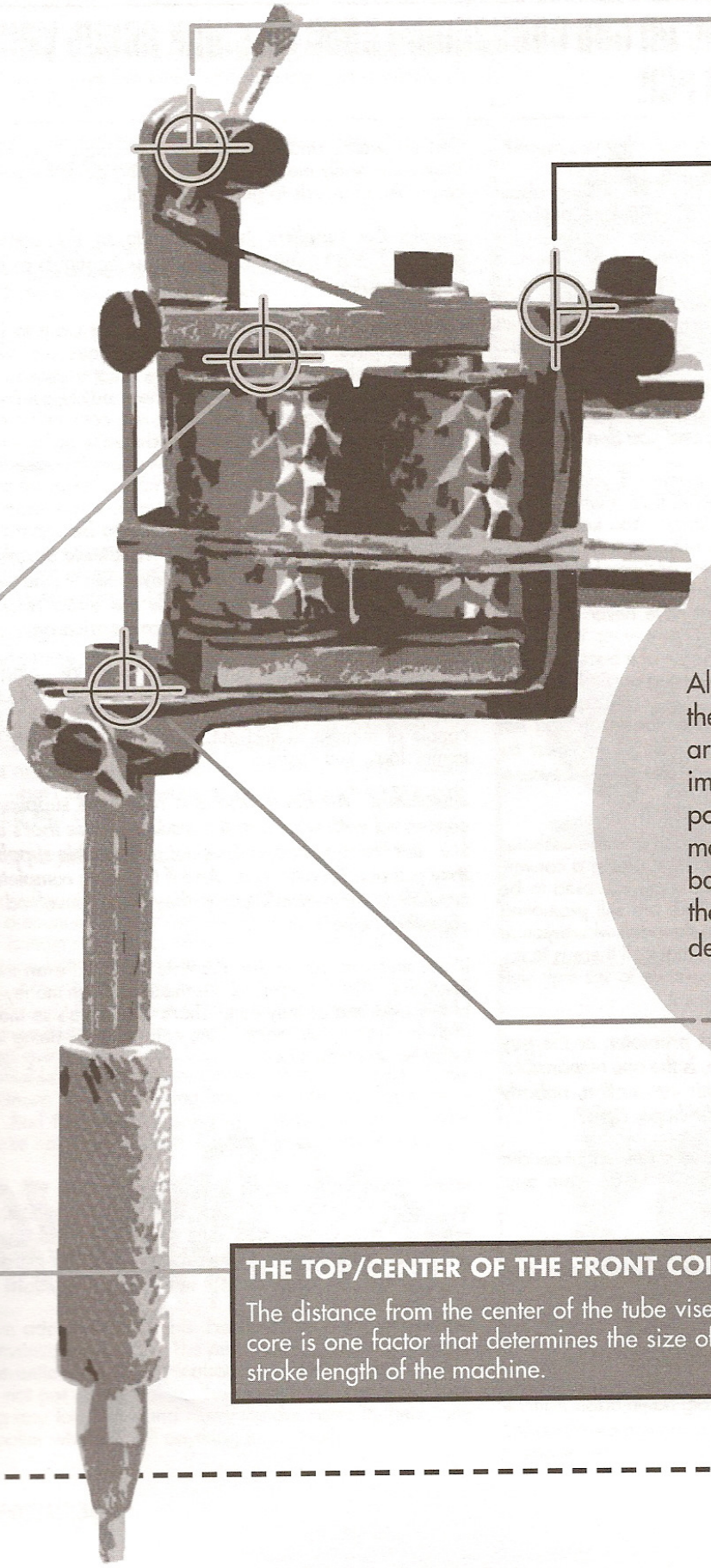
So you don't feel that suppliers need to be separated and put down the hall, but only reputable suppliers should be allowed to be at a convention – and who has a booth at that convention is the direct responsibility of whoever is putting that convention on.

Like I said, if you're a good supplier, you're going to police yourself. You'll ask, "Oh yeah, you want to see this machine. Where do you work?" All it takes is a couple of minutes to find out. And you know – by the terminology, you know.

Absolutely. Anybody who is a reputable supplier is concerned with who is in the trade because that's our life. But for somebody who's not a reputable supplier, they just don't really care. And if tattooing completely crumbles, they won't care; they'll get involved in something else.

Right, and with convention promoters, I don't even think they care. All they want to do is make as much money off of this weekend as they can. That's why there's so many of them. The whole point of the convention is being lost because of the money. MGM

FRAME GEOMETRY



Although not part of the machine frame, the armature bar is an important variable component on a tattoo machine. The armature bar in conjunction with the geometry of the frame determines spring length.

THE TOP/CENTER OF THE FRONT COIL CORE

The distance from the center of the tube vise to the center of the front coil core is one factor that determines the size of the air gap in relation to the stroke length of the machine.

The geometry of a frame determines which springs, coils, armature bar and capacitor must be installed into that frame to make the machine run the way you want. Frame geometry does not determine how a machine will run. The components installed into the frame determine whether a machine will work well as a liner, shader or coloring machine.

There are four key locations on a machine. The placement of these locations in relation to each other are the elements of frame geometry that directly affect machine function. They are: the top binding post mounting hole, the top/front edge of the back spring mount, the top/center of the front coil core and the center of the tube vise at the top of the frame base.

THE TOP BINDING POST MOUNTING HOLE

The placement of the contact point is established by the placement of the top binding post in the frame upright or frame side plate. Location of the contact point is one of the factors that determine front spring length.

THE TOP/FRONT EDGE OF THE BACK SPRING MOUNT

The length of the back spring is measured from the back of the armature bar to the front edge of the back spring mount.

THE CENTER OF THE TUBE VISE AT THE TOP OF THE FRAME BASE

The needle bar should run approximately through the center of the tube vise. The location of the front edge of the armature bar is therefore established by the placement of the tube vise. The distance between the center of the tube vise and the front edge of the back spring mount establishes the length of the armature bar and back spring. Armature bar length is one of the variable factors that determines front and back spring length.

SPRING BASICS

Shorter spring acts harder • Longer spring acts softer
Wider spring acts harder • Narrower spring acts softer
Thicker spring acts harder • Thinner spring acts softer

THE SPRINGS ON A TATTOO MACHINE AFFECT:
- voltage the machine requires
- speed of the machine
- stroke length of the machine

THE FRONT SPRING determines machine speed;
- to make a machine run slower, put a thinner front spring on it.
- to make a machine run faster, put a thicker front spring on it.

THE BACK SPRING provides the force that puts compression on the front spring. The machine will not run properly unless there is the correct amount of back spring force. Back spring force is made up of four factors:

1. Spring Length
2. Spring Width
3. Spring Thickness
4. Angle of Deflection

Of these four factors, back spring angle of deflection is critical. There must be enough angle of deflection to establish desired stroke length and front spring compression.

CAPACITOR BASICS

How Big is that Cap?

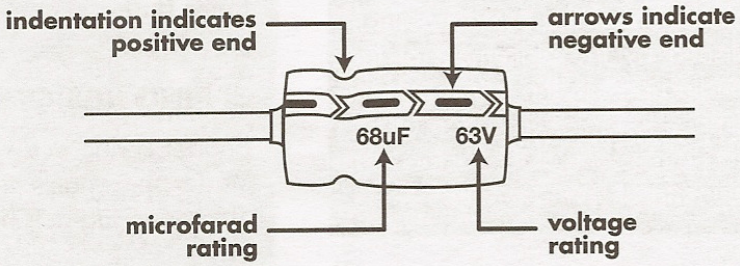
We refer to capacitors as big or small. This has nothing to do with the physical size of the capacitor. Some manufacturers make capacitors that are in a large case and some make the same capacitor in a small case. For many electronic applications, small physical size of the case is a requirement. On a tattoo machine, the physical size of the cap doesn't really matter.

Capacitors have two numbers on them; a voltage rating, which is a number followed by the letter 'V,' and the microfarad rating, which is a number followed by a small letter 'u' and a capital 'F.'

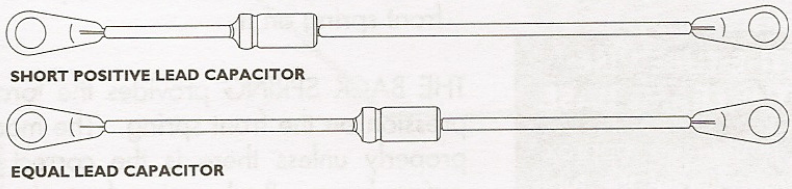
The voltage rating is simply the amount of voltage that can be put through the capacitor without damaging it. Most tattoo machines will never use more than 18 volts, so any cap with a voltage rating above that will do. 35V is a good bet, but if the cap has a higher voltage rating, it's okay.

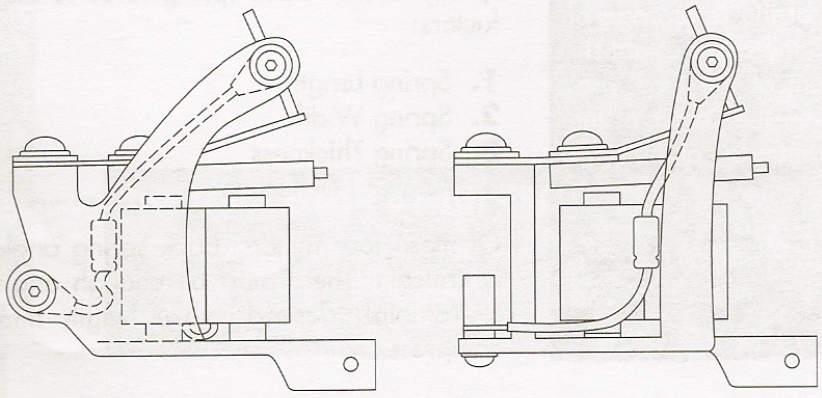
The microfarad rating is the important number on a capacitor. This is what we mean when we refer to the capacitor size. A capacitor is said to be small if it has a microfarad rating of 10uF, 15uF or 22uF. 33uF is a medium size. 47uF and 68uF caps are considered big for a tattoo machine.

Capacitors have a positive and a negative lead. Install them correctly; positive to the insulated back binding post, negative to the top binding post. MGM



There are two styles of wiring available on pre-wired capacitors. Equal length leads for standard upright and sidebar style machine frames, and a short positive lead for most sideplate style frames. Choosing the right style of wiring will make installation easier and more professional in appearance.





HOW TO

HOTROD

A TATTOO MACHINE

CHANGING YOUR MACHINE OVER TO PRE-WIRED CAPACITORS

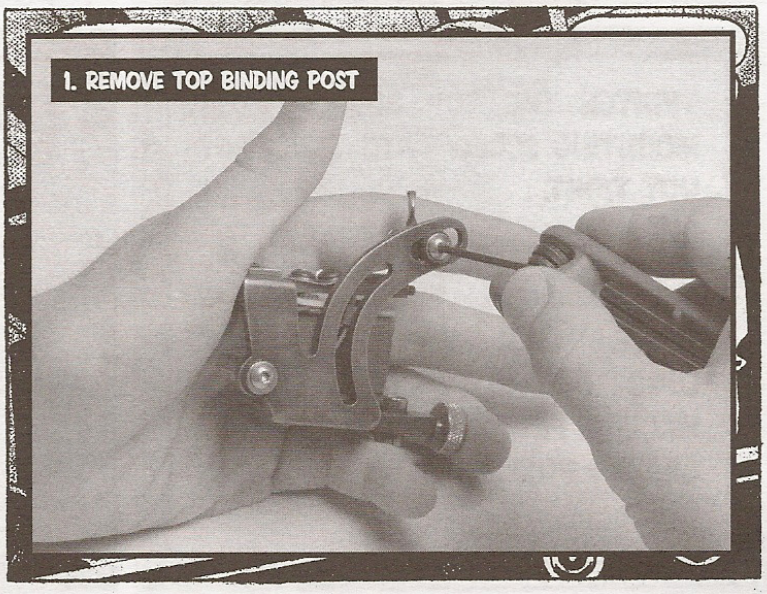
SIX STARS THROWN... SIX FOES...

GENERALLY WHEN YOU BUY A MACHINE THE CAPACITOR AND COIL WIRE LEADS ARE SOLDERED TOGETHER ONTO ONE SOLDER LUG. THIS SET-UP MAKES IT VERY DIFFICULT TO CHANGE CAPACITORS - IN MANY CASES THE COILS NEED TO BE REMOVED TO CHANGE OR REPLACE THE CAPACITOR. ALL YOU NEED TO DO TO INSTALL PRE-WIRED CAPACITORS IS REMOVE THE OLD CAPACITOR FROM YOUR MACHINE AND SIMPLY INSTALL A NEW PRE-WIRED CAPACITOR. THIS IS THE EASIEST WAY TO TRY CAPACITORS WITH DIFFERENT MICROFARAD RATINGS TO DETERMINE WHICH IS BEST SUITED TO HOW YOU RUN YOUR MACHINES.

AND WITH A SHUDDER IT CLINGS...

REMOVE TOP BINDING POST

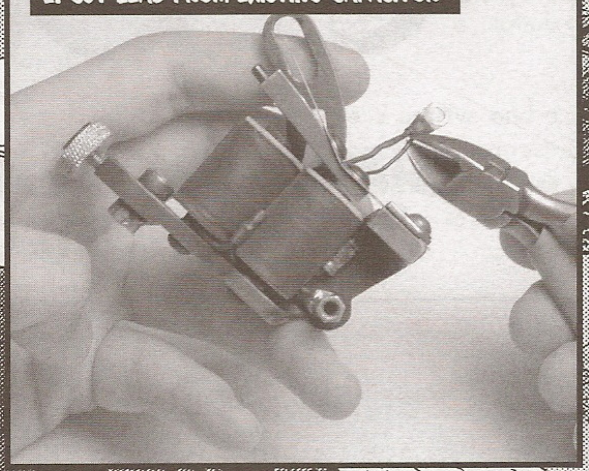
REMOVE THE TOP BINDING POST MOUNTING SCREW. KEEP THE MOUNTING SCREW, WASHERS, INSULATING SHOULDER WASHERS AND BINDING POST IN ORDER.



HOW TO

CAREFULLY CUT THE LEAD FROM YOUR EXISTING CAPACITOR, AS CLOSE TO SOLDER LUG AS POSSIBLE. DO NOT CUT THE COIL WIRE.

2. CUT LEAD FROM EXISTING CAPACITOR

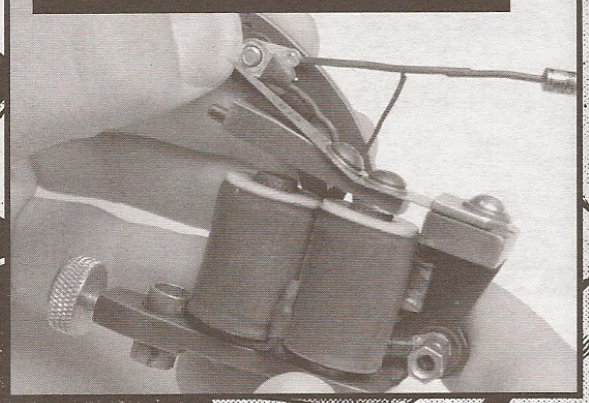


AND INSIDE THE *PLANE*...

INSTALL NEGATIVE LEAD TO TOP BINDING POST

RE-INSTALL ALL COMPONENTS OF THE TOP BINDING POST, INCLUDING THE NEGATIVE SOLDER LUG OF THE NEW PRE-WIRED CAPACITOR.

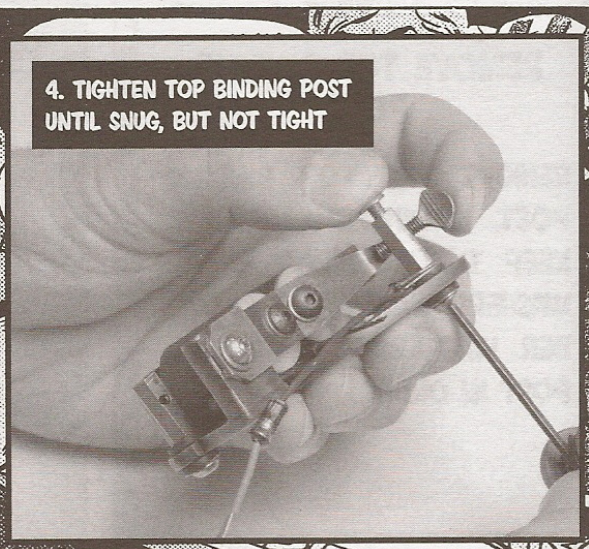
3. RE-INSTALL BINDING POST AND NEGATIVE SOLDER LUG OF PRE-WIRED CAPACITOR LEAD



TIGHTEN THE TOP BINDING POST MOUNTING SCREW UNTIL SNUG, BUT NOT TIGHT.

ALIGN THE WIRES AND MAKE SURE THE INSULATING WASHERS ARE IN PLACE. MAKE SURE THE SOLDER LUGS DO NOT CONTACT THE MACHINE FRAME. TIGHTEN THE TOP BINDING POST MOUNTING SCREW.

4. TIGHTEN TOP BINDING POST UNTIL SNUG, BUT NOT TIGHT



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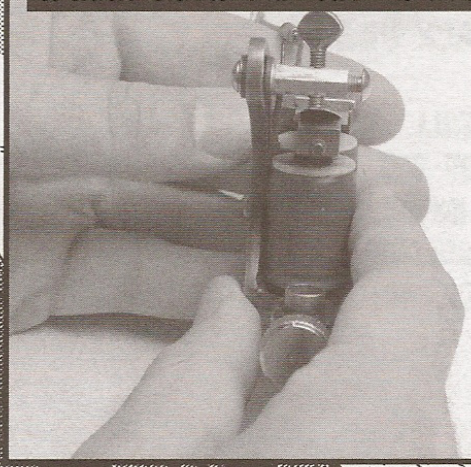
4

CHECK TO MAKE SURE THAT THE CONTACT POINT SCREW IS CENTERED ON THE FRONT SPRING. IF THERE ARE SHIM WASHERS INSTALLED WITH THE TOP BINDING POST, ONE OR MORE MAY HAVE TO BE REMOVED, OR THE FRONT SPRING MAY HAVE TO BE LOOSENED AND ITS PLACEMENT ADJUSTED.

5. CENTER CONTACT POINT SCREW ON SPRING

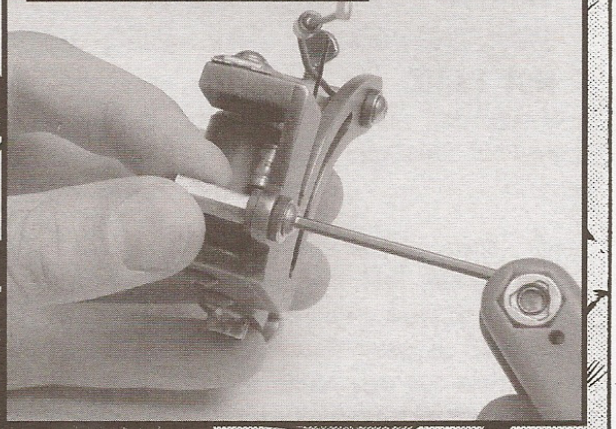


AND INSIDE THE *PLANE*...

REMOVE BACK BINDING POST

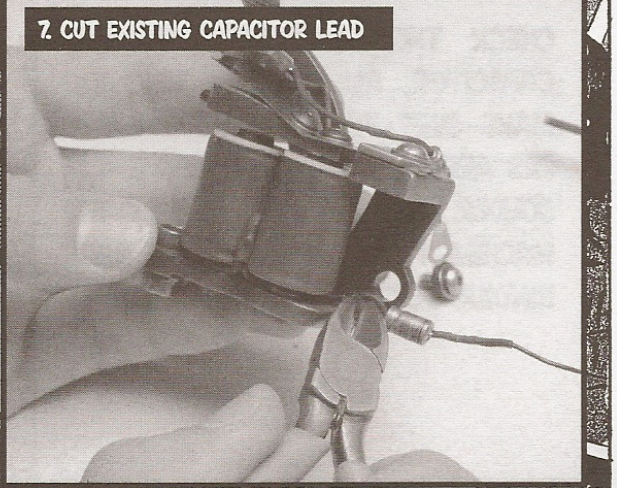
REMOVE THE BACK BINDING POST MOUNTING SCREW. KEEP THE MOUNTING SCREW, WASHERS, INSULATING SHOULDER WASHERS AND BINDING POST IN ORDER.

6. REMOVE BACK BINDING POST



CAREFULLY CUT THE LEAD FROM YOUR EXISTING CAPACITOR, AS CLOSE TO SOLDER LUG AS POSSIBLE. DO NOT CUT THE COIL WIRE.

7. CUT EXISTING CAPACITOR LEAD



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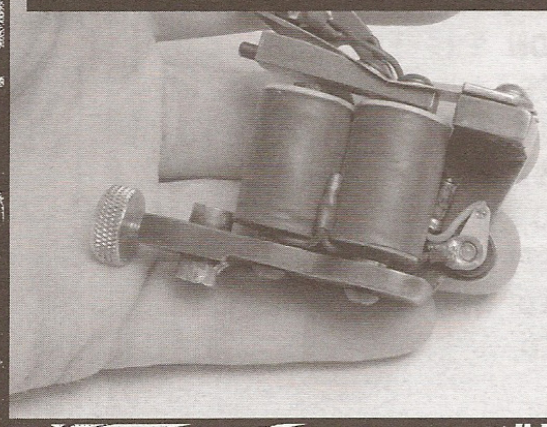
AND WITH A *SHUDDER*, IT CLINGS

INSTALL POSITIVE LEAD TO BACK BINDING POST

RE-INSTALL ALL COMPONENTS OF THE BACK BINDING POST, INCLUDING THE POSITIVE SOLDER LUG OF THE NEW PRE-WIRED CAPACITOR.

WE HAVE TO

8. RE-INSTALL BACK BINDING POST AND POSITIVE SOLDER LUG OF PRE-WIRED CAPACITOR LEAD

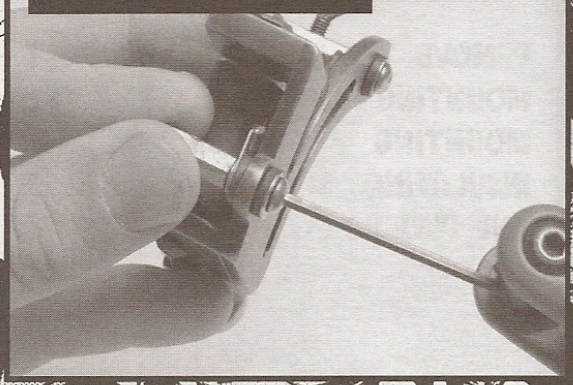


MEANWHILE...ON THE BEACH...

TIGHTEN THE BACK BINDING POST MOUNTING SCREW UNTIL SNUG, BUT NOT TIGHT.

IN THAT CASE

9. TIGHTEN TOP BINDING POST UNTIL SNUG, BUT NOT TIGHT

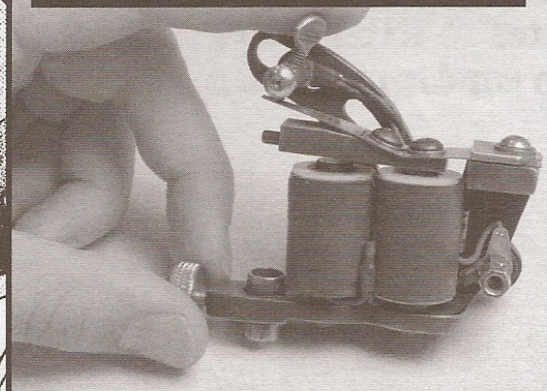


DRAWN BY THE MAGNETIC PULL, SLASH'S

CHECK THE PLACEMENT OF THE CAPACITOR, ALIGN THE WIRES AND MAKE SURE THE INSULATING WASHERS ARE IN PLACE. MAKE SURE THE SOLDER LUGS DO NOT CONTACT THE MACHINE FRAME. TIGHTEN THE BACK BINDING POST MOUNTING SCREW.

--AND *STICKS*, LEAVING SLASH *DANGLING*--

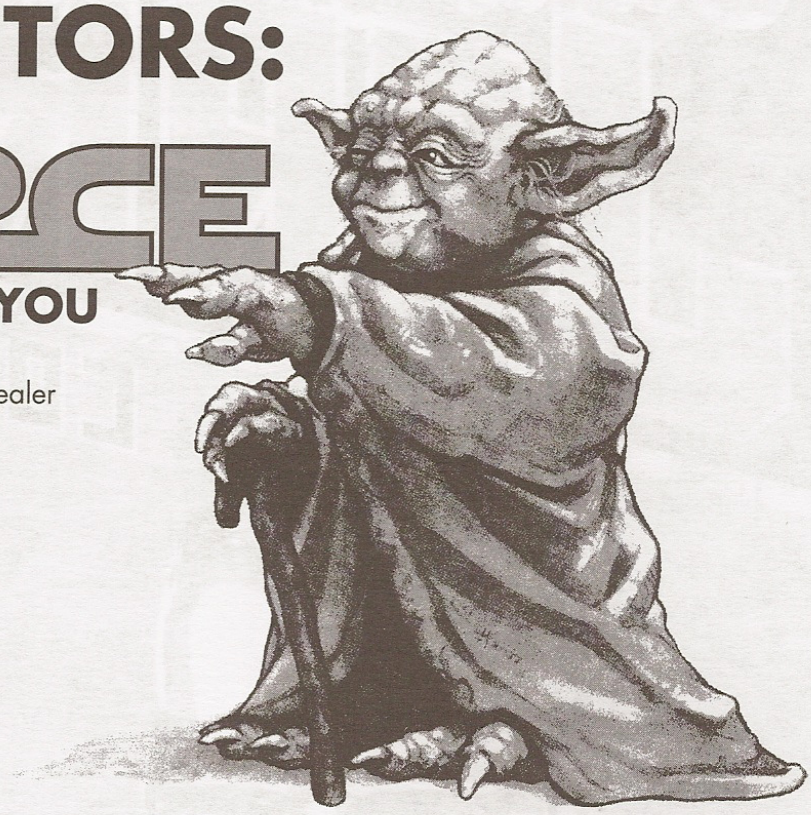
10. CHECK PLACEMENT OF CAPACITOR, ALIGNMENT OF WIRES AND PLACEMENT OF WASHERS



17

CAPACITORS:
MAY THE FORCE REMAIN WITH YOU

OR...
Your Capacitor is a Speed Dealer with Back-up Power



Think of a capacitor as if it is a battery. It holds a charge. The smaller the microfarad rating of the capacitor, the smaller the charge it holds. The bigger the microfarad rating of the capacitor, the bigger the charge it will hold.

When a machine is running, the capacitor on it charges up; as soon as it is full, it discharges completely, then fully charges again and discharges. In this way we're using the capacitor like a switch. Small caps charge and recharge quickly, making the machine run quickly. Big caps take longer to charge, so they slow the machine down.

Because the capacitor holds some voltage, it provides an amount of back-up power to the machine. When a machine bogs down under load, it will draw some extra power from the capacitor. Bigger capacitors hold more reserve power, so if you want a machine to have more back-up power, put a bigger capacitor on it.

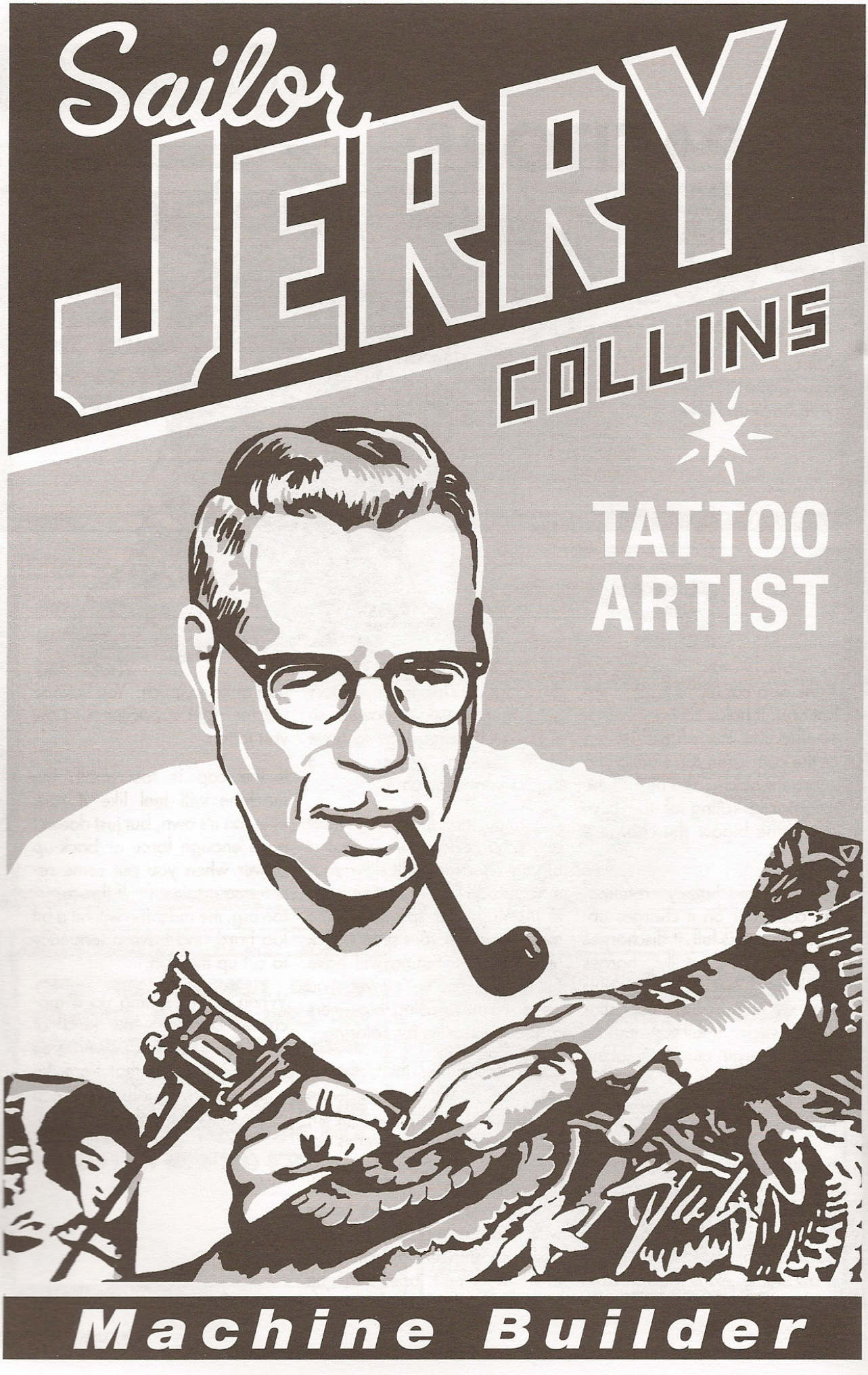
The important thing you must remember about this is that a bigger capacitor will slow your machine down. You may have to install thicker springs on the machine to get your speed back up, but the machine will have the extra reserve power you need if you're using big liners or lots of needles for coloring.

You might think, then, that a bigger capacitor would be better for all machines. Not so. Too much back-up power is not always good. Small liners, and machines being used for black and grey shading, work better with less back-up power. With a slightly smaller capacitor, the machine won't bite into the skin quite so much. You have to get the right capacitor for how you tattoo.

If the cap is too small, the machine will feel like it runs okay on it's own, but just doesn't have enough force or back-up power when you put some resistance against it. If the cap is too big, the machine will hit a bit too hard and have a tendency to cut up the skin.

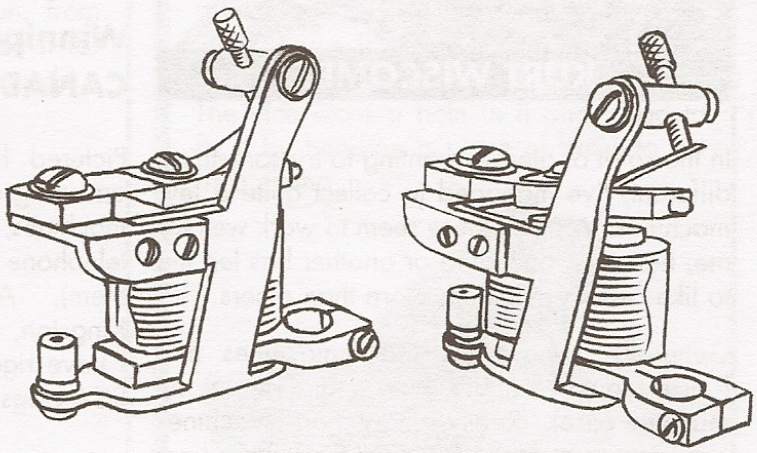
When you're setting up a machine, decide what kind of back-up reserve power you want. You'll get that from the capacitor. Then adjust the speed of the machine with the springs.

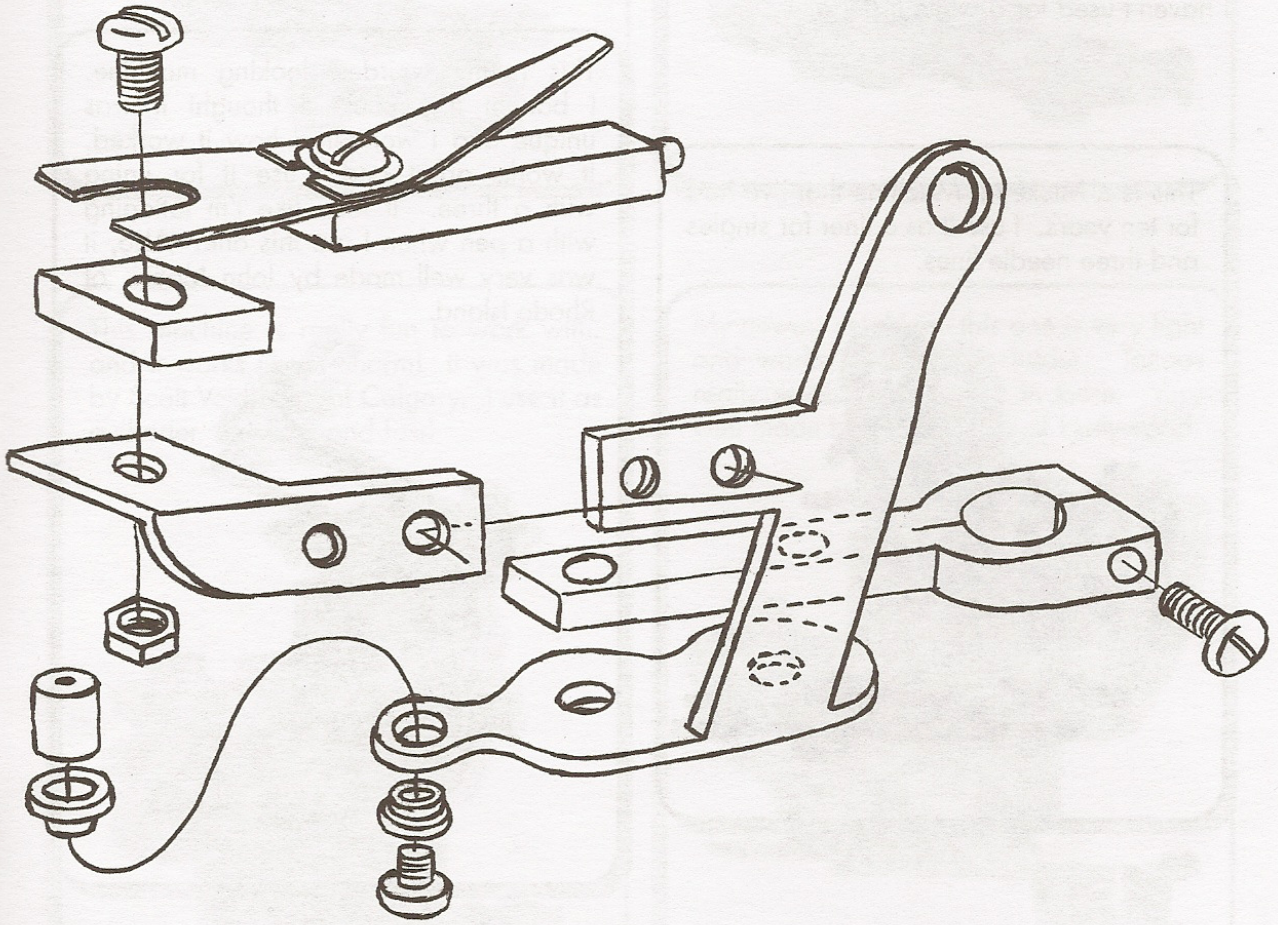
MGM


Sailor
JERRY
COLLINS
TATTOO
ARTIST
Machine Builder

ALTHOUGH HE WASN'T A SUPPLIER, SAILOR JERRY WAS PERHAPS THE MOST INNOVATIVE MACHINE BUILDER EVER. AN INGENIOUS PROBLEM-SOLVER AND MASTER CRAFTSMAN, HE EXAMINED EVERY ASPECT OF TATTOOING.

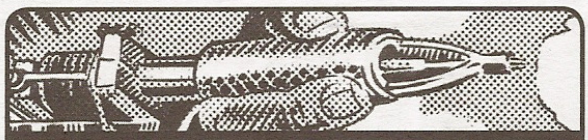
OVER THE YEARS HE BUILT MACHINES IN VARIOUS FRAME STYLES, OUT OF EVERY MATERIAL THAT WAS AVAILABLE TO HIM. ONE OF THE MOST INTERESTING WAS THIS PRE-FAB MACHINE FRAME MADE OF ANGLE ALUMINUM!





SAILOR JERRY PRE-FAB CIRCA 1970

Made of 2 pieces of stock angle aluminum, an aluminum spacer at the back spring mount and a combination yoke and tube vise made of a single piece of steel.



KURT WISCOMBE

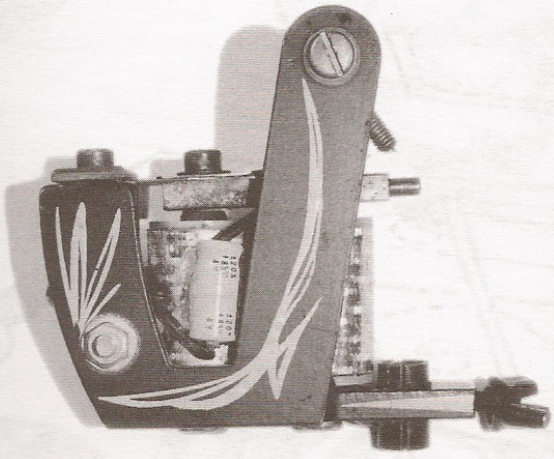
Winnipeg, Manitoba
CANADA

In the spirit of always wanting to try something different, I've managed to collect quite a few machines. Most of these seem to work well for me; however, one thing or another has led me to like certain machines more than others.

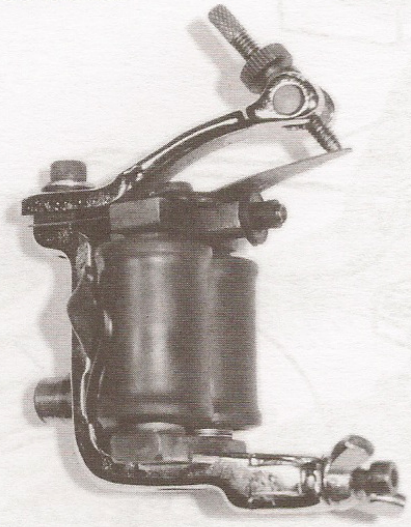
Generally, I have six main machines that I use regularly (that's how many fit in my machine case). Really – how many machines can you use at once, anyway? Sometimes I get tired of using a machine and I'll start using one I haven't used for a while instead.

Pictured here are the six machines that I am using at the moment. In addition to these machines, I have some great Mickey Sharpz telephone dials (or "old reliables," as I call them). As well I have one from Mack of Kingston, Aaron Cain, Ron Ackers, etc. I have rigged all of my machines for use with RCA plugs.

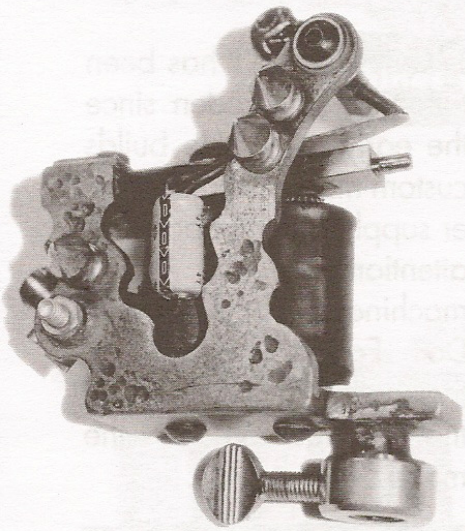
This is a Mickey B Machine that I've had for ten years. I use it as a liner for singles and three needle lines.



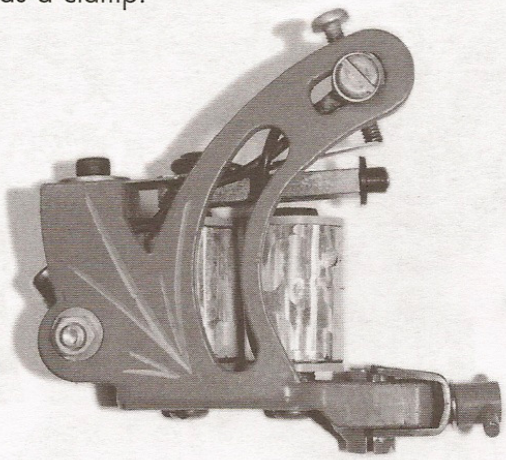
This is my weirdest looking machine. I bought it because I thought it was unique and I wondered how it worked. It works great and I use it for lining with a three. It feels like I'm tattooing with a pen when I use this one. Also, it was very well made by John Moniz, of Rhode Island.



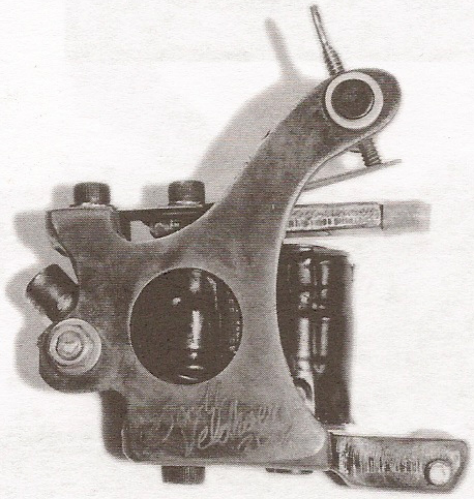
My heavy metal "Gwar" machine. Customized by me for no reason, from a Mickey Sharpz machine. I use it for "heavy" lines, like 5, 7 and 10 rounds.



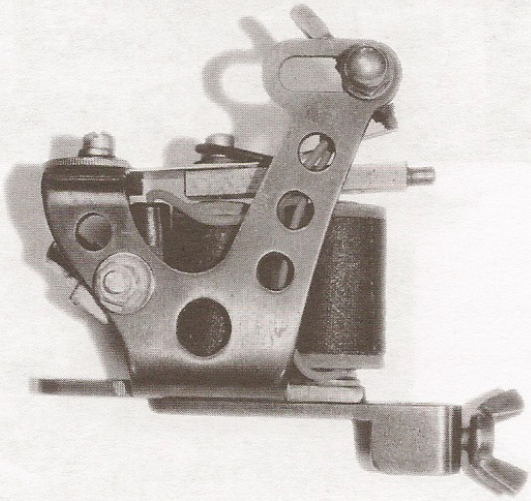
I find this Mickey B machine works well for a liner or a shader without adjusting anything. I use it often, but I always have to decide what I'm going to use it for. The vice wore a hole in it and I had to fix it by bending a piece of brass to act as a clamp.



This machine is really fun to work with, and it works like a charm! It was made by Scott Veldhoen, of Calgary. I use it as a shader. Smooth and fast!



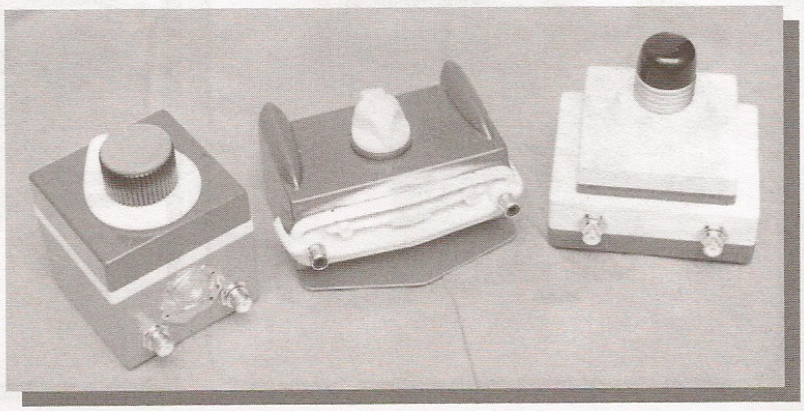
My newest machine - this one is very light and works great as a shader. Tattoos really smooth, but puts it in there. Very well made by Juan Puente of Hollywood.



Doc Forest
SWEDEN

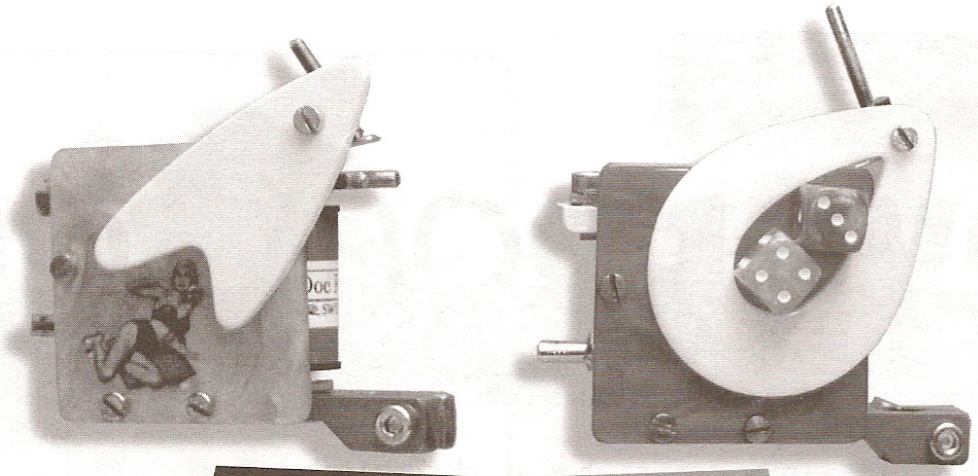
Doc Forest's workshop

Doc Forest has been tattooing in Sweden since the early 60's. He builds custom machines and power supplies with unparalled attention to detail! These machines are built to work - Doc Forest hand winds the coils and hand cuts the springs on all the machines he builds.

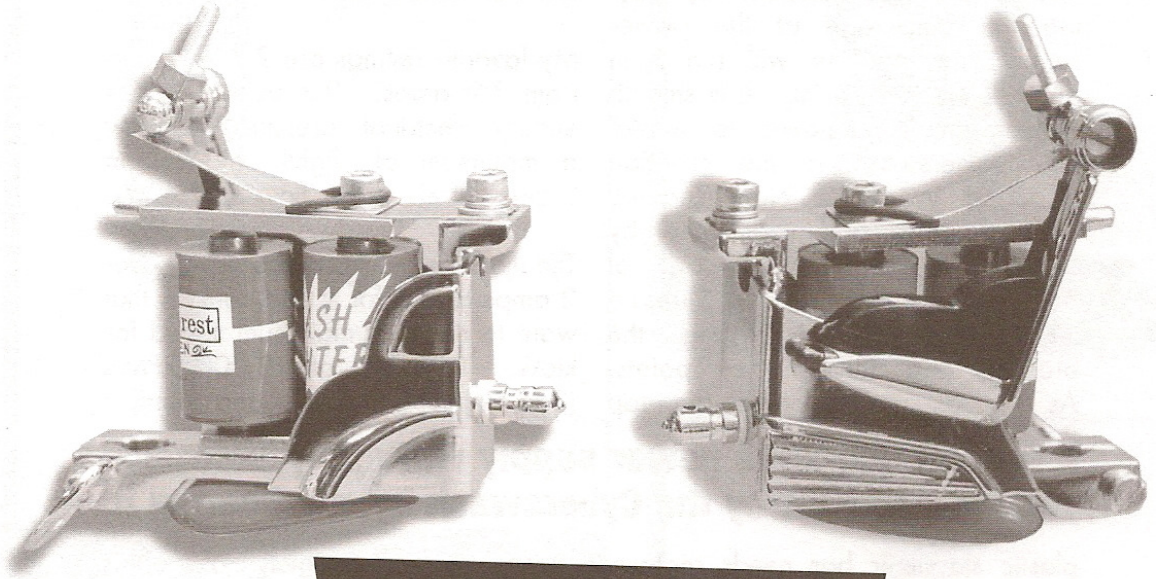


Custom power supplies by Doc Forest.

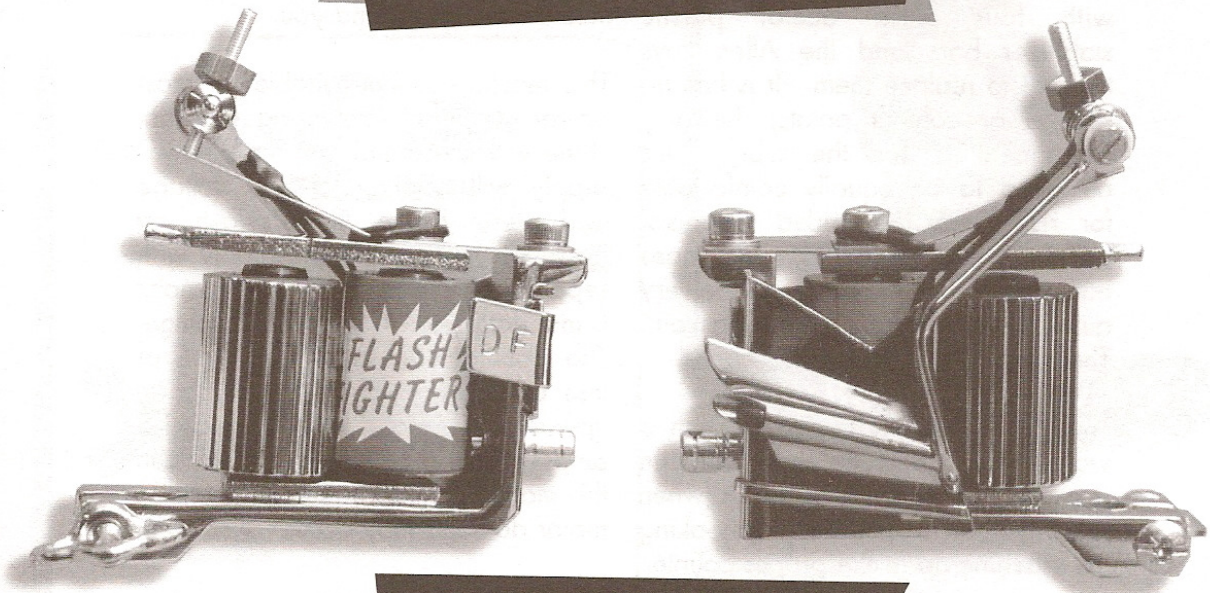
To see more of Doc Forest's machines and tattoos, visit www.docforest.com



Machines with plastic side plates



Tail light hotrod style machine (left and right views)



Machine with tail light (left and right views)

All machines on this page built by Doc Forest

CYBERSWASH

By William Rafti

The Cyberswash machine has a unique drive mechanism called a swash plate that turns vertical torque into up and down motion. By varying the amperage at the power supply, the machine will run from about 2 Hz to 360 Hz. It is smooth running with little tendency to vibrate. The Cyberswash is the creation of Craig Wyeth of New Zealand and is made and distributed by Swashdrive Developments Ltd. of Australia. The Cyberswash requires no tuning, apart from oiling the brushes and three pivot points. As far as maintenance, the top plastic stabilizer bar needs replacement about once every 3,000 hours of running time. The machine comes with four extra acetal plastic stabilizer bars and the Allen keys needed to replace them. It is has no springs or contact points; the only adjustment is for the tube. It's designed to be equally comfortable for right and left-handed tattooists, weighs 164g (5.78oz), and does not heat up. The Cyberswash is very quiet, about as loud as falling rain. The frame is stainless steel.

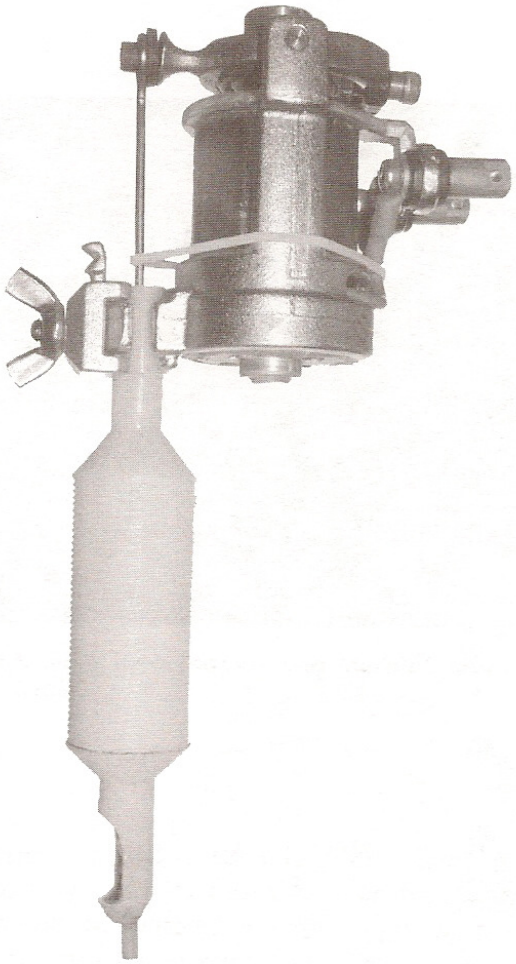
The brushes are arranged in such a way that the machine should be run in a counter-clockwise direction (when looking down at it). To simplify hooking the machine up in the proper counter-clockwise polarity, I added a blue band of heat shrink tube to the clip that attaches to the side of the machine that has a blue wire.

My favorite settings are 2.7 volts and from 1-2 amps. 2.7 volts provides enough electrical "pressure" to allow a maximum of slightly more than 2 amps of electrical "flow" (15.4 W).

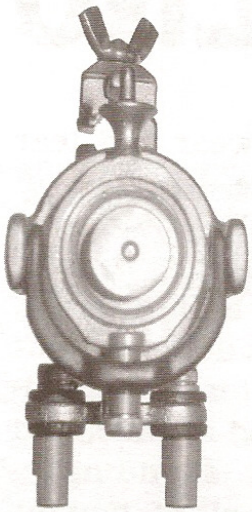
The machine should not be run at over 2 amps except for speed demons that want to run it at maximum speed for kicks. To run it at 22,000 RPM's (366 Hz) set it to 5 volts and 3 amps; at anything even remotely close to this speed keep the machine away from any skin that you don't want to find in little specks all around you.

A normal one-knob power supply will apply excessive voltage and destroy the Cyberswash by overheating it.

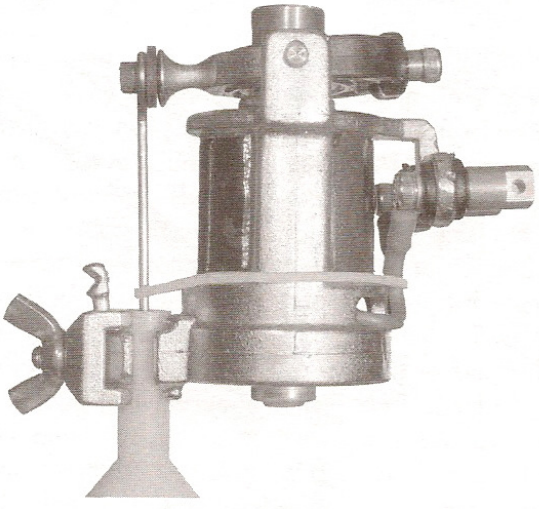
This machine is not suitable for most power supplies. Powering this machine with a normal one-knob power supply will apply excessive voltage and destroy the Cyberswash by overheating it. A power supply with separate voltage and amperage knobs is mandatory for running this machine. The manufacturer says that 2 volts or less at 1 amp works best, with an upward range of 2-4 volts and 1-2 amps being acceptable. Never run this machine at more than 7.2 volts as motor damage may occur. MGM



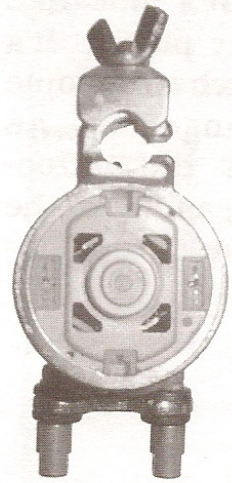
Side View With Tube



Top View



Side View



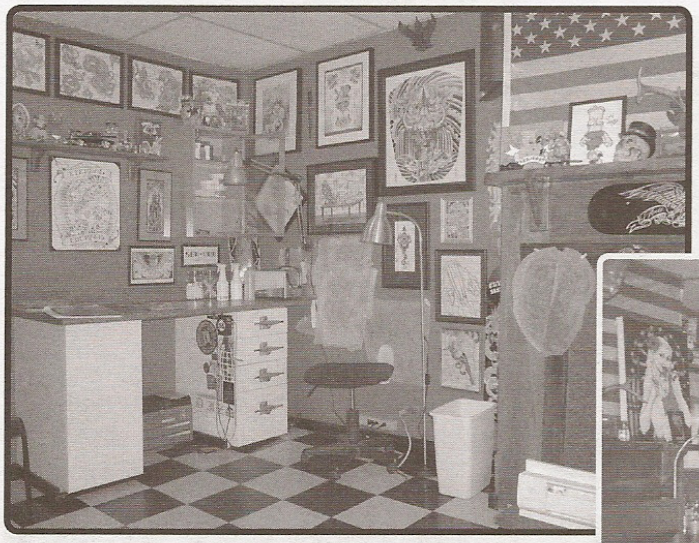
Bottom View

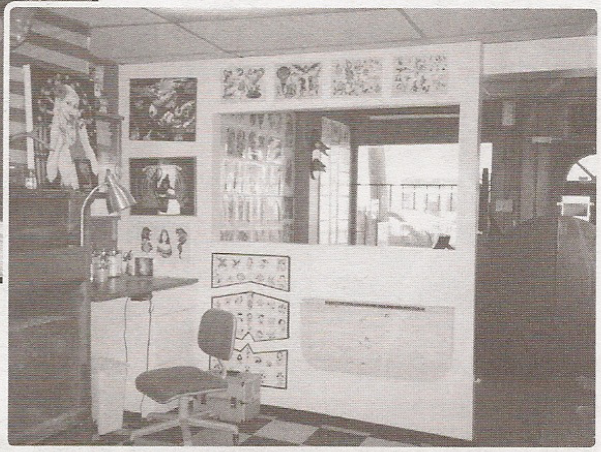
To see the Swashdrive Cyberswash in motion, go to:

http://www.tattoo.net.nz/animated_swash.htm

SHOP RENOVATIONS

Normal wear and tear will take its toll on every shop, and at some point it will need to be renovated. It can be done without closing for an extended period of time, and without spending a great deal of money. Most importantly, it can be done without losing sight of the fact that there is something about a tattoo shop that's not like any other place. It's a place where people are changed. As much as the tattooing changes them, the shop should, too.





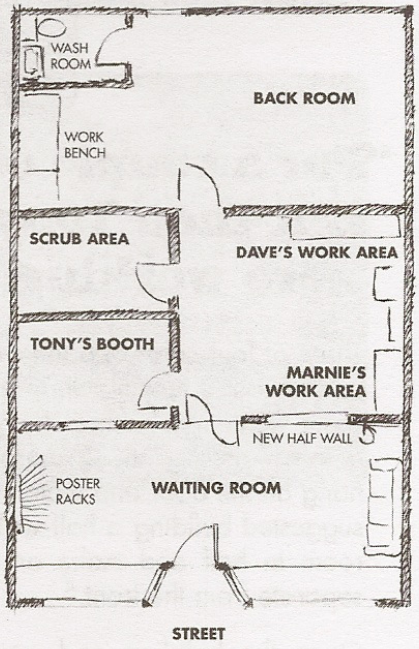
Dave's work area (above) and Marnie's work area (right).

Pointe Saint Charles Tattoo fits into its neighborhood with a comfortable ease that has developed over time. The shop has been at this location since 1976; before that it was just across the street. Over the past three decades, the neighborhood and the tattoo shop have seen a lot of changes.

At the end of 2002, shop owner, Tony D'Annessa, was joined by two more tattoo artists - Dave Cummings and Carnie Marnie. The challenge was to update the shop, make room for three tattooers where there had previously only been one, and not lose any of the history and style of the shop. Even though the changes at the shop might mean some new clients might be showing up at P.S.C. Tattoo, it was important that the neighbors and neighborhood customers shouldn't feel as though things had really changed. After all, this is a tattoo shop and this *isn't* the Las Vegas Strip, or even Sunset Strip. It's a neighborhood where people work, shop, live, and if they have some money left at the end of the week, they might get a tattoo.

The entire renovation was planned to take about a week. Tony's room wasn't going to be touched. The second room in the shop, which had been used as a drawing room, would become the scrub room and sterilization area. Other than that, the shop would be re-painted, changing the color of the walls from blue to yellow. Two new work areas had to be built, one for Dave and one for Marnie. "It took a week and a half, about," says Dave, but he's quick to add, "We had a good crew, though. We took everything off the walls, stripped everything and patched everything.

P.S.C. TATTOO - MONTREAL



"There were two days right after New Year's where Tony was not allowed to work – so there was dust everywhere and he was sneaking people behind the poly-curtain into his booth." ~ Marnie

"For a couple of days we were hard-core closed. But then Tony was still doing names when we were working." ~ Dave

Three or four coats of paint was the main thing, and we put a new tile floor down. The waiting room was huge before. It was all flash. Tony didn't really like that, 'cause everyone would hang on the door and watch him work. So we suggested building a half wall - cut the waiting room in half and make an area that's more separate from the front."

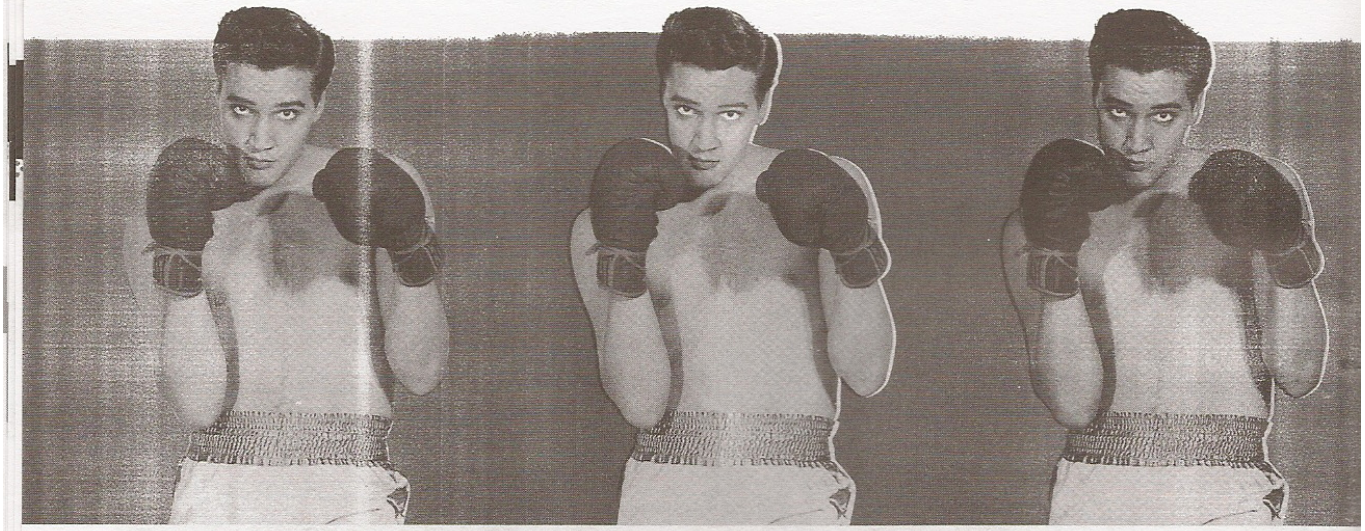
Once the building and painting was done, some new flash and almost all of the old flash was put back up, including some historically important flash that Tony had painted on window blinds in 1961, when he was tattooing in New York City's infamous Bowery district. At that time, tattooing had been outlawed in New York, so if you were tattooing and had flash, you had to be able to hide it quickly.

When Tony moved to Montreal from New York, opening the shop on Centre Street in Pointe Saint Charles was an obvious choice. "The street used to be like downtown. People would come to Centre Street. There were tons of bars and clubs...all that was on this street before," says Dave. "This is sort of one of the last bastions of ungentrified Montreal, but it's starting," says Marnie. "It'll probably be another ten years before this will open up as a more commercial street again." I'm sure that P.S.C. Tattoo will still be here, still a part of the neighborhood, and still showing us what a tattoo shop should be. MGM

"Tony wanted the sign to just say Tattoo, 'cause that's what he'd always had there, and he always just said 'Tattoo' when he answered the phone. But the city came by when he ordered the sign and they said, 'Non, non, non, it has to be in French.' So *they* named the shop Tatouage Pointe Saint Charles, and it's had that name ever since."
~ Marnie

"These old sheets of flash were our inspiration (for colors). Red for the blood, yellow for the flash background and black for the lines, the ink." ~ Marnie

"The back room wasn't heated; stuff just sort of got put back there. We didn't throw anything out – we just straightened everything up."
~ Dave



TATTOOING, WHAT HAPPENED?

by Bill Baker

When you're looking at the history of tattooing in North America, you're looking at something that is considered by most people to be low art.

Some tattooers searching for artistic merit and social significance anywhere in our past have turned to the traditional tattooing of Micronesia and the South Pacific. You could say that the discovery of South Pacific tattooing by Europeans was the starting point of all modern western tattooing, and in that way, it is part of our history. Others have turned to the rich tattoo history of Japan. So much of modern North American tattooing has elements of design and layout taken directly from, or inspired by, traditional Japanese tattooing that it also has become part of our tattoo history.

It's important to understand what's come before us and how we've gotten to this point, but it's more important to realize where we're going and what our potential is. Tattooing can be more than it has been, and should be more than a misinterpretation and reproduction of the past – ours, or anyone else's. It can be more diverse, more artistic and more respected than it ever has been at any time in its complete history.

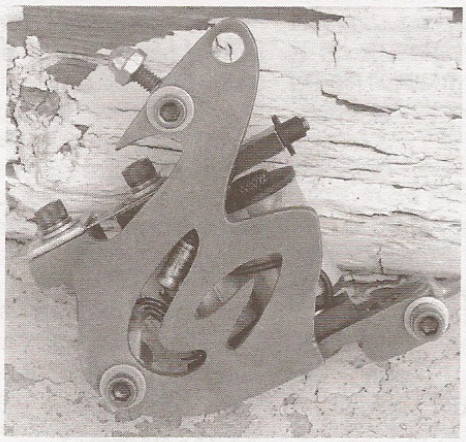
There is one aspect of western tattooing that has not only endured, but has been adopted into almost every tattoo culture in the world - the direct current oscillating relay tattoo machine. It has gained this acceptance because it is perfectly suited to the process of tattooing. Providing it's set up properly, there's no machine that will do a better job of tattooing. The sound and look of it have become an integral part of tattooing.

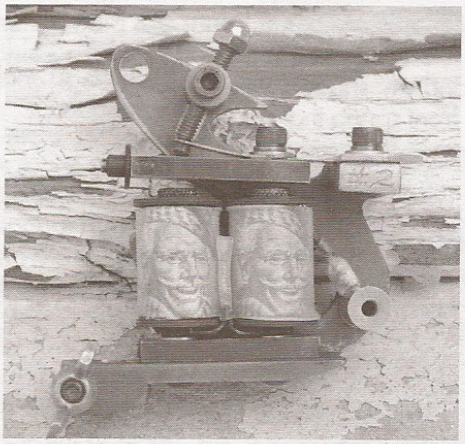
There are alternatives to the conventional dual electromagnetic machine. They range from a completely quiet machine that runs on compressed air, to the direct current rotary machines that have been around for ages. Now that we can measure various machine functions, it has become possible to approximate the mechanical action of the oscillating relay with a different type of machine, but not all the subtleties and versatility of it. The fact that it is part of our history is as important as any of its mechanical attributes. If we ever get rid of the oscillating relay machine, we will risk losing one of the few elements that both the tattooer and the person being tattooed identify strongly with. The sound of the machine is fundamental to every customer's tattooing experience. It is a part of the shop atmosphere. The sound is also what we use continuously to tell if our machines are running correctly while we work. Lose the machine and we'll lose more than we've ever lost before.

If you're concerned about what tattooing has turned into, don't worry about whether or not you approve of every single person who's tattooing in the world; focus your concerns on whether or not those people are tattooing with an oscillating relay machine. If you want to be subversive and strike out against everything tattooing has turned into, use some weirdo machine. You'll be chipping away at the very foundation of tattooing, and your work will probably show it. MGM

JAY DECATOR

Machine Builder





Bill Baker: How long have you been tattooing?

Jay Decator: I have been tattooing for over ten years.

What was the first machine you ever had to tattoo with, and where did you get it?

At the first shop I worked in, I came across an old photo-copied page advertising Mike Malone and Keith Underwood's tattoo machines. Weeks later I had a new Rollomatic.

Really? That was your first machine? That's amazing. When you phoned him he was decent to you?

Yeah, he was really friendly. He went on for a good long while.

You were lucky you started out with the whole custom machine thing. In a lot of ways that must have been a strong influence on you to work on machines.

I think that machine was way too much for me to start with. But now I still use it all the time.

How many machines do you keep on hand to work with every day now?

I've collected over a dozen different machines over the years and use them all on a rotating basis. I have one of Soba's old liners that I seem to use every day. I have another liner machine from Aaron Cain that is really good for flabby people and even better for non-flabby. It also looks like a work of art and runs the same. I still use the Rollomatic all the time, especially when I have to sketch on an outline of a whole sleeve or anything else big. I have a Mickey Bee I got back around '94, which took me six months to get in the mail; I use that all the time. I still keep the old chrome springs on for nostalgia.

There are a lot of guys building machines, small runs. That's kind of, in a way, a new phenomenon. But really, that's the old way. It seems new because it was almost completely lost – I guess it was the forums that sort of kick-started this whole resurgence of small-run and one-off production of machines. How influential were the forums to you and other guys you know who do small production runs?

The forums were a huge part of it. A major part of it. Sharing ideas is not only good for learning new stuff, it also lets you know that other people agree with what you're thinking, you know.

Yeah.

On a pretty wide level, like all of North America and beyond.

Well, the forums really have done that. When you decided to cast these frames and build your own machine, where did you get your original geometry? Most guys will say, well, my original geometry came from that machine, and I kind of put everything in the same place.

Yeah, it's a Jonesy.

That National Deluxe frame with the sidebar?

I went to a machine seminar a few years back and there was a booklet that had diagrams in it – all the measurements and everything – so I just copied it off of that. I knew I was going to have to have a yoke and everything. Initially I was going to try and cast these myself. I knew it was going to be a non-ferrous material, so I knew a yoke was going to be in the equation. One big change, though, was more

I don't see the need to tattoo with futuristic air powered laser pens while you drive your Segway around town.

options for placement of the front post, as I like to make my liners 'cutback' and my shaders with a fairly long front spring that hits the contact square for even wear. I hated those English machines with the crazy 45-degree angle that would wear your screws into sharp little piercing needles.

You said you made a run of ten. Is that right, ten only?

Yeah, ten, plus a prototype. For now I just wanted to mess around with them and see how it went. Basically all I do is, well, I design the frame and have it cast. The binding posts and that aren't mine, I just get them, you know.

Yeah, of course.

I cut the springs and tune it. I do all the machining myself, in my tiny apartment with a drill press, which makes quite a fucking mess that has to be cleaned up before my girlfriend gets home from work. As with the frame design, it's a pretty low-tech operation with a lot of 'eye-balling' going on in lieu of actual precise measurement.

You're using Soba coils?

Yeah, it's saving time.

Do you think you'll keep building machines for yourself?

Yeah, it's hard to find the time. With running the business, drawing tattoos for people and making needles, but yeah, whenever I have the time, really.

Are you interested in selling these machines?

Well, yeah, people can contact me if they're interested.

This is a very small production run.

I'd have to make more if people wanted them or wanted to trade.

Having spent so much time with machines, it's got to be reflected in your tattooing. Does all the machine work translate into some change in your tattooing?

Oh, sure it does. The direct result of messing around with the machines is how the tattooing looks in the skin.

It's not just building the machine for the sake of having the machine sit on the shelf. Do you still spend some time on the forums?

Well, I don't really post too much anymore. It's not like it used to be like when I was on there two or three years ago, when there were people on like Aaron Cain – he's a really smart guy, in terms of the technical stuff. People would be talking about something and he'd just come in with all this crazy stuff, like "Whoa, there's a real gem," you know – that doesn't happen so much anymore. People have become a little tight-lipped with the growth and the numbers on the forums.

At that time, though, it must have been a wealth of information.

In one month I learned so much stuff, stuff I don't really have to know to tune a machine or anything but is still really nice to know. It gives you a good foundation. Stuff about metal and the makeup of the metal – I have a whole file saved on disk of just technical stuff.

It's funny, 'cause it was just a little time frame there, and I don't think anybody really imagined where it was going to go. It just sort of blew up, and if you were there for it all...

If you were there, if you caught it, yeah, you were lucky.

But it seems like it's not really that way anymore.

No. People are really careful with what they say now. I'm not really sure why. I can see why, in a way, because they worked hard for that knowledge.

And when you give it out, it's hard to know if people even appreciate it.

It's become such a bandwagon now. I mean, I'm no different; I'm kind of on the bandwagon too. But since it's become such a bandwagon now, there's a bit of backlash against it.

Machine building?

Yeah, from the guys who did it a little bit before and stuff.

Well, there's no shortage of tattoo machines now.

No, there's not.

And there's a lot of different ones. You could replicate the speed and stroke length of the machine with a different mechanical system but it's not going to do the same thing. I don't think there is a better system.

No, I don't think so either. I am really into the traditional tattoo machine. I'm all for evolution, but not innovation for it's own sake. I don't see the need to tattoo with futuristic air powered laser pens while you drive your Segway around town. **MGM**

WHAT'S YOUR PROBLEM?
YOUR TECHNICAL DIFFICULTIES RESOLVED

When the front coil core is worn down more than the back, is this bad? When the armature bar hits the top of the coil cores, should it be flat?

If the front coil core is worn down lower than the back coil core, it is not bad, as long as the armature bar is not hitting the back coil core. Eventually there can be so much wear to the front coil core and armature bar that contact is made between the armature bar and back coil core. What you want is for the armature bar to hit the front coil core solidly and to have minimal clearance between the armature bar and back coil core. The simplest way to achieve this is to shim the front coil core so that when the armature bar contacts the front coil core the armature bar is running parallel to the frame base. Once that is done, it is easy to shim the back coil so that there is minimal clearance. If you have been running a machine with a low front coil, shimming up the front coil will change how much back spring pressure your machine has because the back spring angle of deflection will be reduced. The stroke length and speed of the machine will be changed because the size of the air gap will be reduced. To compensate for that, the point gap and back spring may have to be adjusted or changed.

Can you give me some information about sterilizing tubes in an autoclave?

First of all, I must tell you I have no formal training in aseptic procedure. Your local Health Department must be considered the legal authority on these topics.

The first step in sterilizing instruments for tattooing is getting them physically clean. An ultrasonic cleaner is invaluable in this process. Three piece tubes must be disassembled. The tube tip, grip and tube stem should be completely cleaned and sterilized individually then reassembled as sterile components. When I set up to do a tattoo that requires two different needle configurations, (generally a liner and a shader) I have eight sterile packages:

1. Liner Needle Configuration
2. Tube Tip for Liner
3. Tube Stem for Liner
4. Tube Grip for Liner
5. Shader Needle Configuration
6. Tube Tip for Shader
7. Tube Stem for Shader
8. Tube Grip for Shader

Each package should be dated and numbered. A ledger should be kept, showing who cleaned and packaged the instruments prior to sterilization, as well as who ran the cycle in the sterilizer. Copies of the results of spore tests for that autoclave should also be kept in that journal.

Although this seems like a lot of effort, the more documentation and identification of responsibility, the better. Generally once someone has accepted that they are responsible for their actions, or for their job, they will be more careful in the performance of that work. MGM

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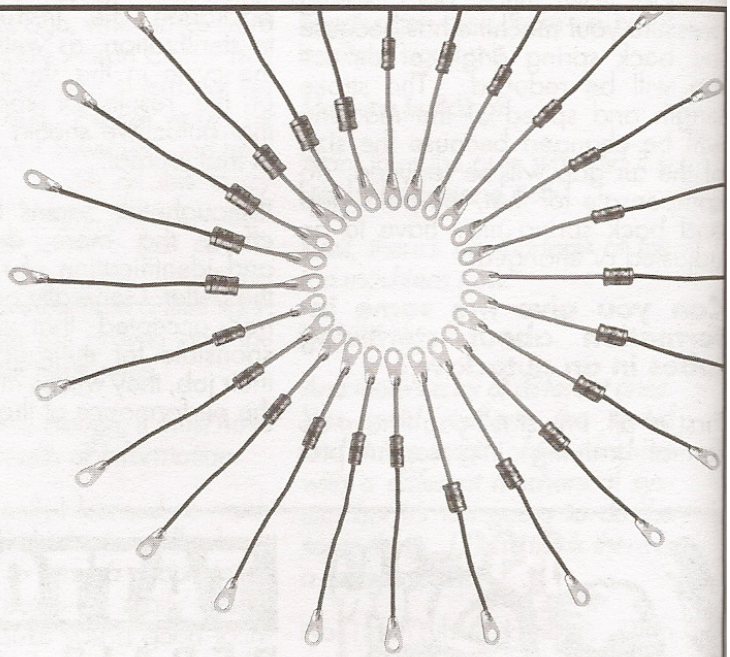

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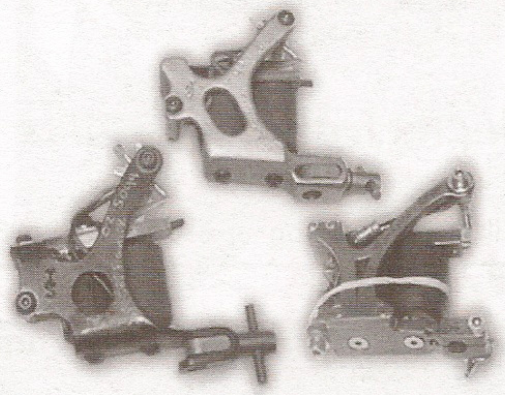

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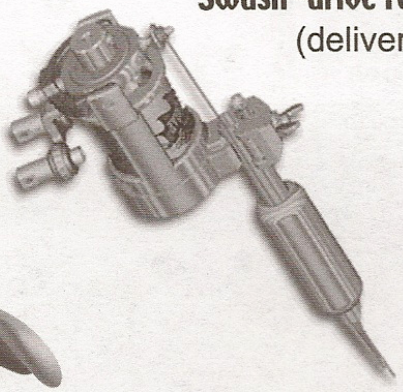

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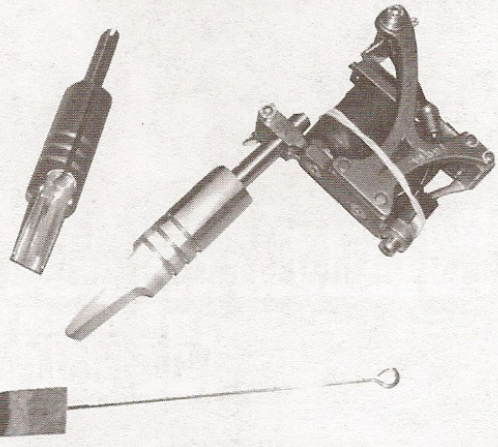

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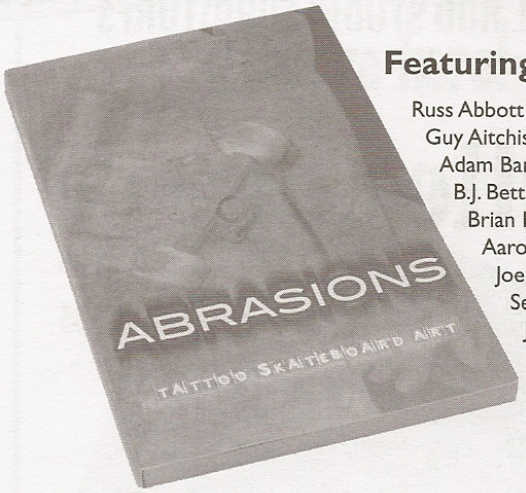

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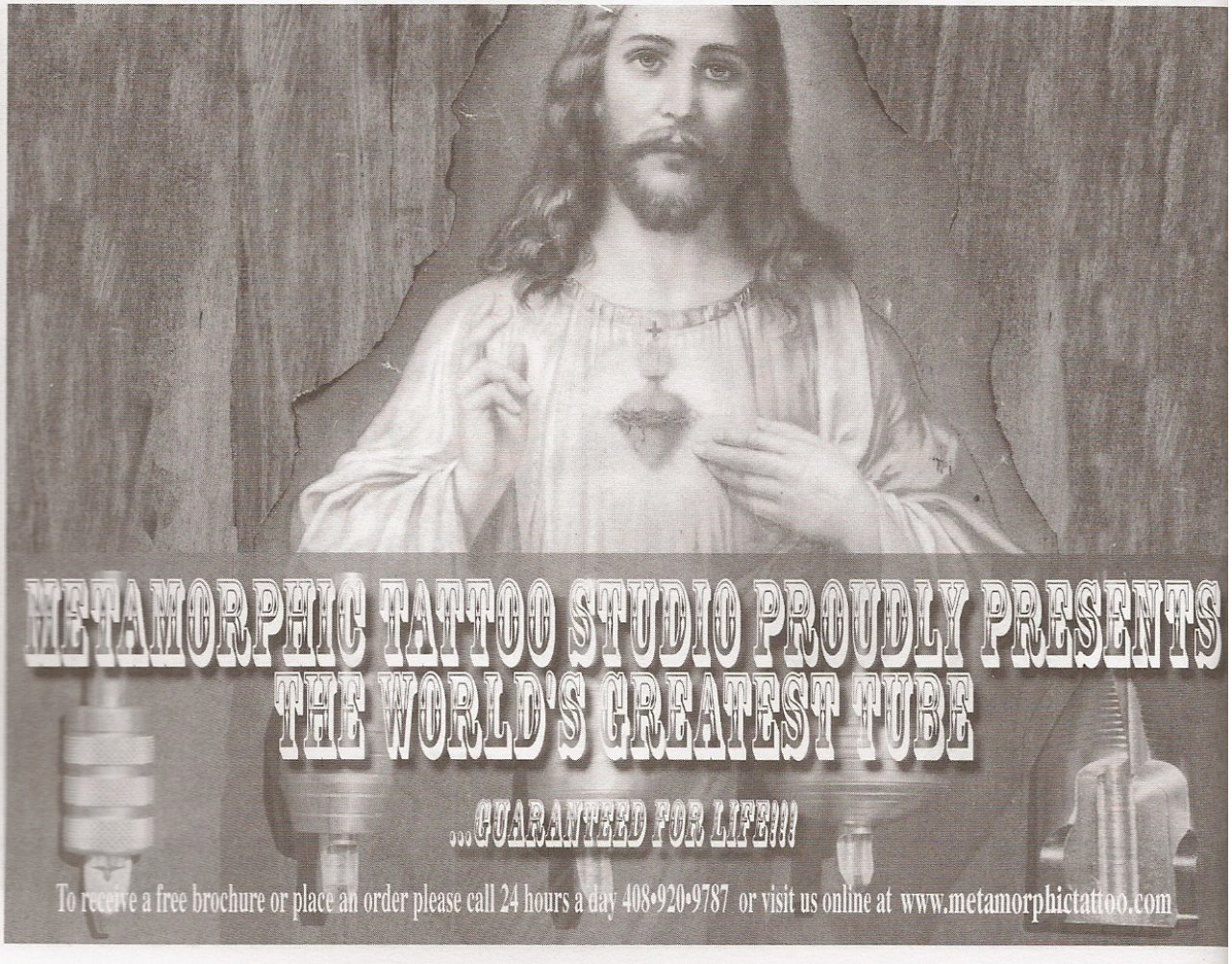
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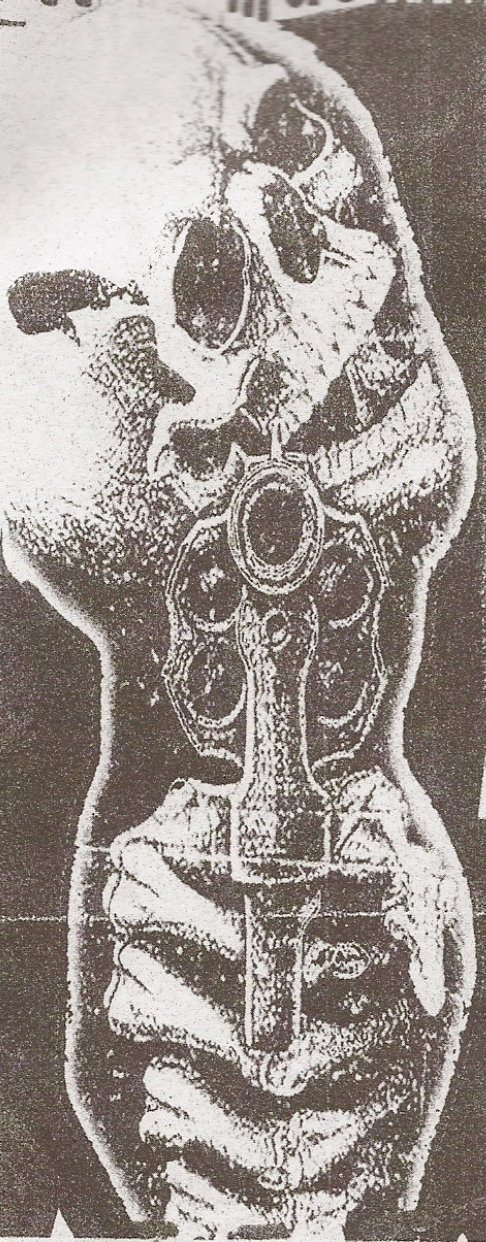

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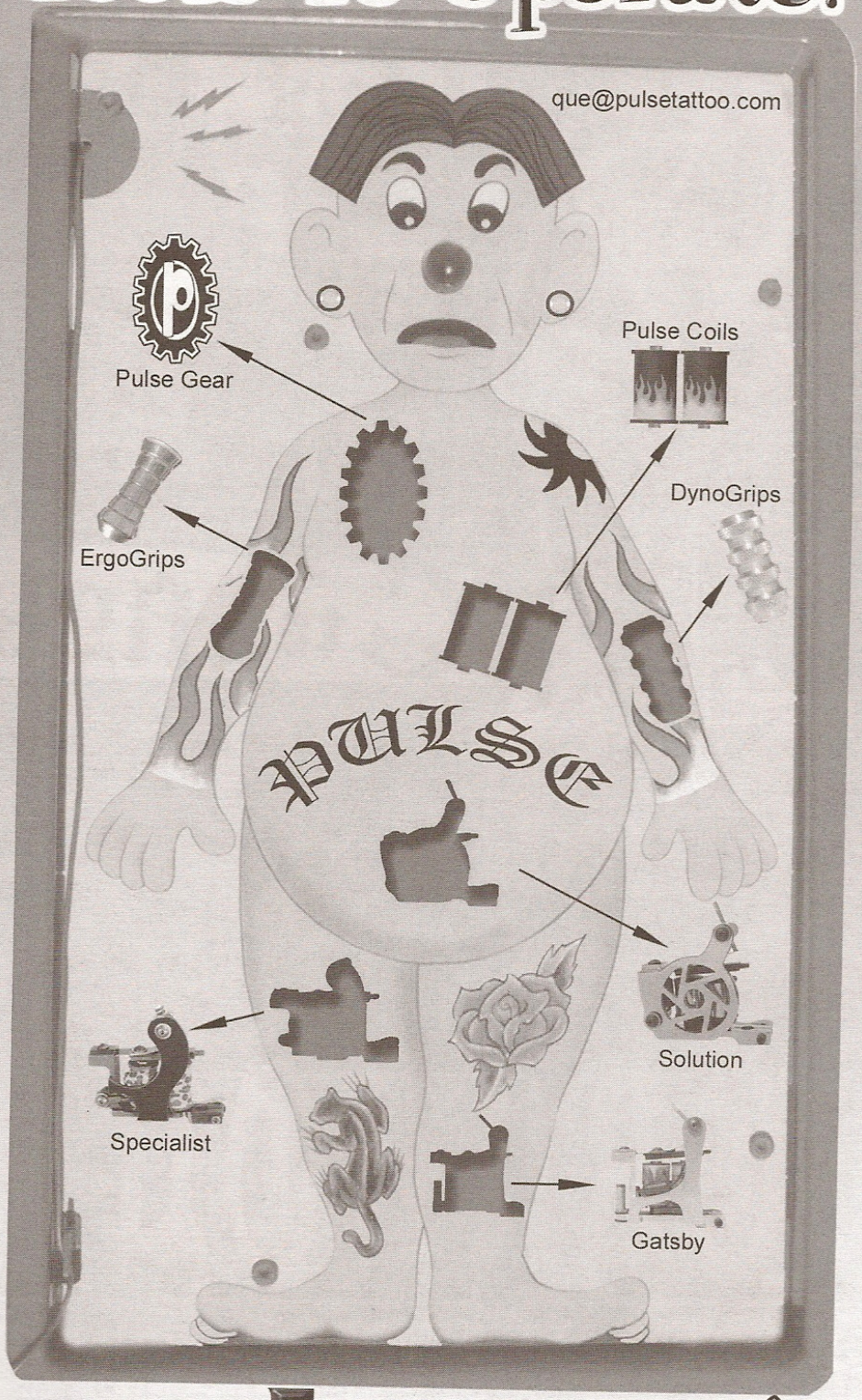

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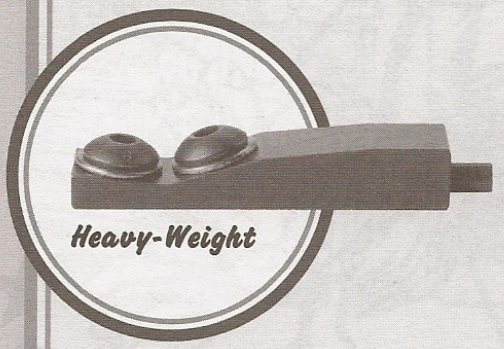

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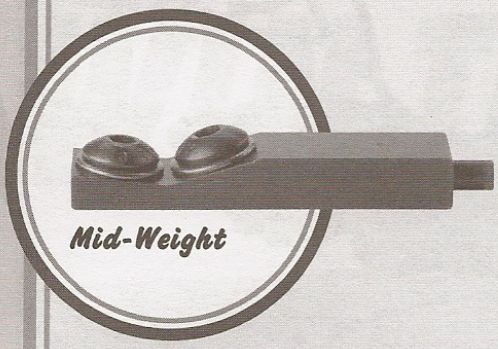

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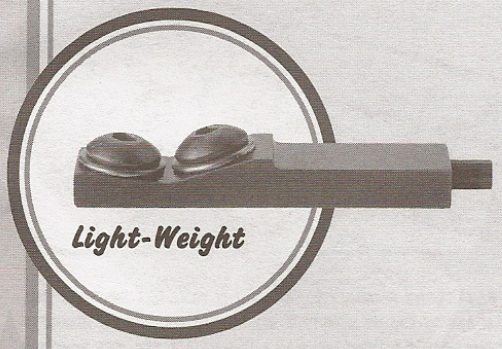

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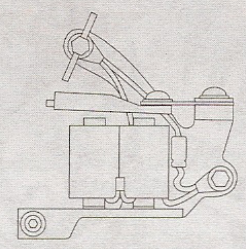

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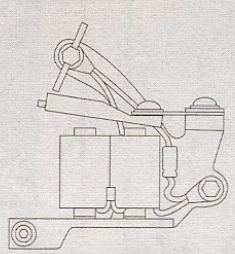

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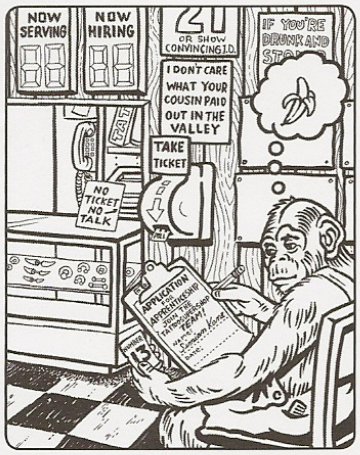
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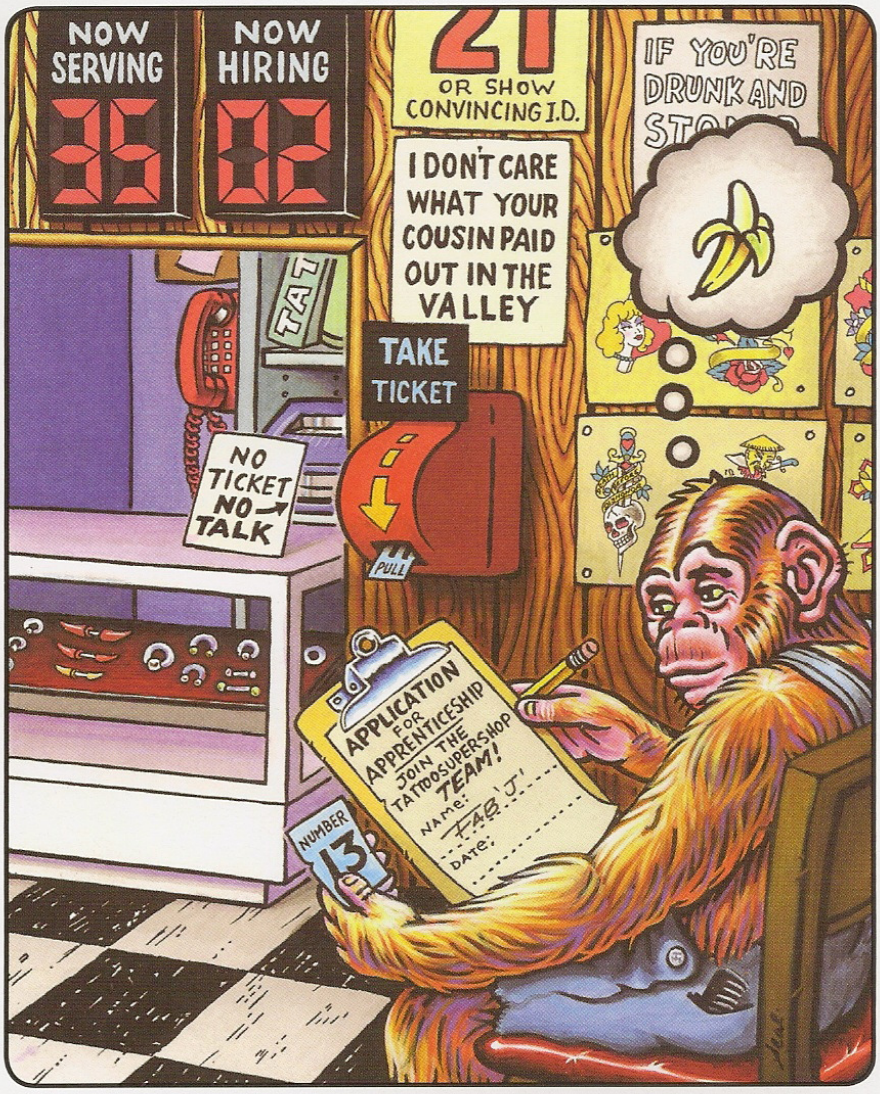

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